Innominate mGuard

User's Manual

Software-Release 4.2.0

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1 Introduction

The mGuard protects IP data connections. The device supports the following functions:

- Network Card (mGuard PCI), Switch (mGuard delta)
- VPN router (VPN - **V**irtual **P**rivate **N**etwork) for the secure transfer of data via public networks (hardware-based DES, 3DES and AES encryption, IPsec protocol)
- Configurable firewall to provide protection against unauthorized access. The dynamic packet filter inspects the source and destination addresses of data packets and blocks undesired traffic.
- Virus protection with support for the protocols HTTP, FTP, SMTP and POP3.

The device can be conveniently configured using a Web browser.

Network features

- Stealth (Auto, Static, Multi), Router (Static, DHCP Client), PPPoE (for DSL) and PPTP (for DSL) connectivity
- VLAN
- DHCP server/relay on the external and internal network interfaces
- DNS cache on the internal network interface
- Administration using HTTPS and SSH

Firewall features

- Stateful packet inspection
- Anti-spoofing
- IP Filtering
- L2 Filtering (only stealth mode)
- NAT with FTP, IRC and PPTP pass through (only router modes)
- 1:1 NAT (only router modes)
- Port forwarding (only router modes)
- Firewall throughput max. 99MBit/s
- Individual firewall rules for different users (user firewall)

Anti-Virus features

- ClamAV virus protection
- Supported protocols: HTTP, FTP, POP3 and SMTP (sending)
- The virus filter can decompress the following formats:
    - ZIP
    - RAR
    - GZIP
    - BZIP2
    - TAR
    - MS OLE2
    - MS Cabinet Dateien (CAB)
    - MS CHM (Komprimiertes HTML)
    - MS SZDD
    - UPX
    - FSG
    - Petite

VPN features

- Protocol: IPsec (Tunnel and Transport Mode)
- IPsec DES encryption - 56 Bit
- IPsec 3DES encryption - 168 Bit
- IPsec AES encryption - 128, 192 and 256 Bit
- Packet authentication: MD5, SHA-1
- Internet Key Exchange (IKE) with Main and Quick Mode
- Authentication: Pre-Shared Key (PSK), X.509v3 certificate
- DynDNS

- NAT-T
- Dead Peer Detection (DPD)
- Hardware encryption
- up to 250 VPN tunnels (please refer to the feature table)
- VPN throughput max. 35MBits/s on 266MHz or 70MBit/s on 533MHz models.
- IPsec firewall and 1:1 NAT
- Default route over VPN

Additional features

- MAU management
- Remote logging
- Router/Firewall Redundancy
- IPsec/L2TP Server
- LLDP
- Administration by SNMP v1-v3 (please refer to the feature table) and Innominate Device Manager (IDM)

Support

In case of problems with the mGuard please contact your local dealer. Additional information about the device and relevant changes as well as release notes and software updates can be found on our web site: http://www.innominate.com/

1.1 Device versions

mGuard is available in the following device versions, which have largely identical functions. All devices can be utilized regardless of the processor technology and operating system the connected computers use.

mGuard smart

Smallest device model. Can, for example, simply be plugged between the computer or local network (on mGuard's LAN port) and an available router (on mGuard's WAN port), without having to change existing system configurations or driver installations. Designed for instant use in the office or when on the go.

mGuard PCI

This card, which can be plugged into a PCI slot, provides the computer it is installed in with all mGuard functions in driver mode and can additionally be utilised as a normal network card. A network card already on hand in the computer or another local computer / local network can be connected in the power-over-PCI mode.

mGuard blade

The mGuard blade Pack includes the mGuard bladeBase, which can be easily installed into standard 3 U racks (19 inches) and accommodate up to 12 mGuard blades. Thus this version is ideally suited for use in an industrial environment where it can protect several

server systems individually and independently of one another. An additional serial interface enables remote configuration using a telephone dial-up connection or a terminal.

EAGLE mGuard

EAGLE mGuard (previously “mGuard industrial”) was developed in cooperation with the Industrial Security Alliance partner Hirschmann Automation und Control GmbH. The device is designed for top hat rail mounting (according to DIN EN 50 022) and is therefore especially suited for use in industrial environments. The optional configuration connection and the option to establish a telephone dial-up connection via the V.24 interface provide for additional applications options.

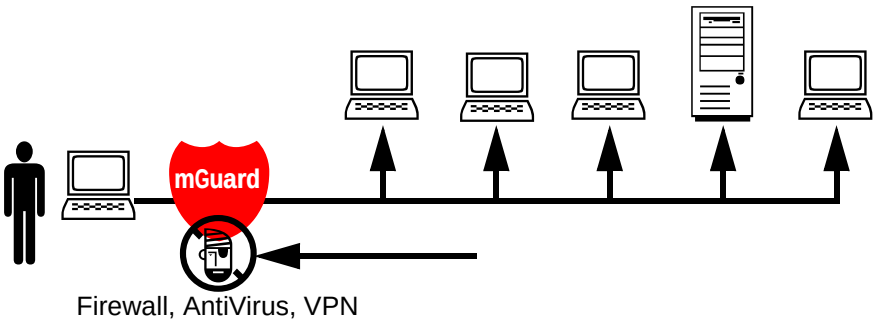
mGuard delta

This device model is a compact LAN switch (Ethernet / Fast Ethernet) designed for connecting up to 4 LAN segments. Thus the device is especially suited for logically segmented network environments where the locally connected computers / networks share the mGuard functions. An additional serial interface enables configuration using a telephone dial-up connection or a terminal. .With its robust metal housing, mGuard delta is not only suitable as a desktop device but also for placement in wiring closets.

2 Typical application scenarios

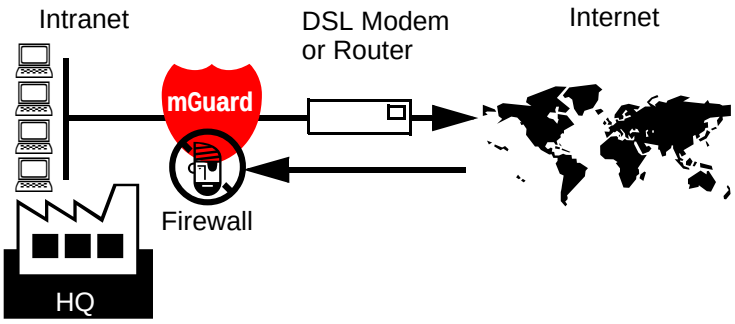
Some of the more common application scenarios may be found below.

Stealth Mode



In *Stealth* Mode (factory default) the mGuard can be installed between an individual computer and the rest of the network.
The settings for Firewall, AntiVirus and VPN can be made with a webbrowser at the URL https://1.1.1.1/.
On the computer itself no configuration changes are required.

Network Router

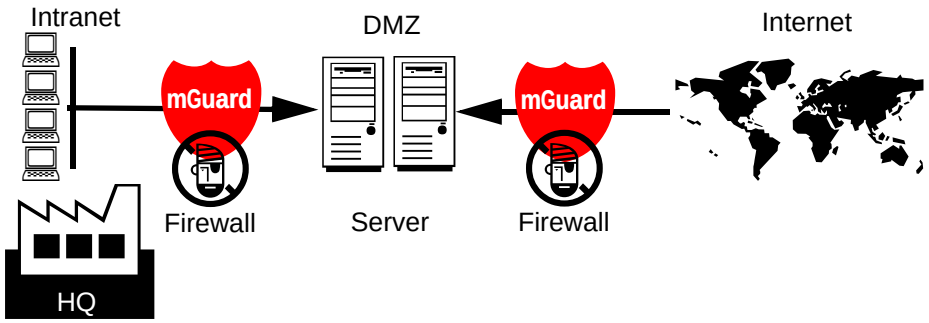


The mGuard is able to provide internet connectivity to a group of computers while protecting the company network with its firewall.
For this purpose one of the following network modes may be used:

- *Router*, if the Internet access is established via a DSL router or dedicated line.
- *PPPoE*, if for example the Internet access is established via a DSL modem using the PPPoE protocol (e.g. in Germany).
- *PPTP*, if for example the Internet access is established via a DSL modem using the PPTP protocol (e.g. in Austria).

The mGuard must be set as the default gateway on the locally connected client system(s).

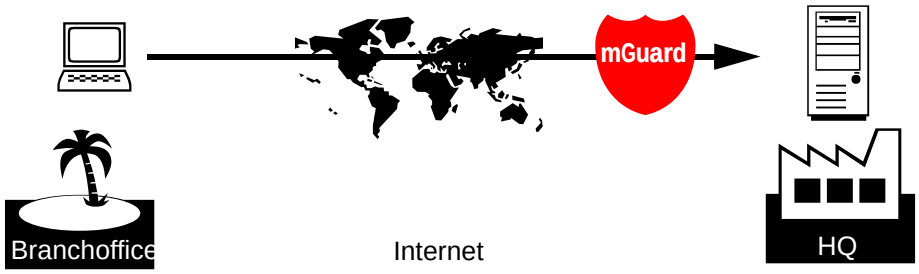
DMZ



A DMZ (Demilitarized Zone) is a protected network, which sits between an internal network and an external network. For example a company's website may be inside a DMZ, granting FTP write access to computers in the intranet and HTTP read-only access to both networks.
The IP addresses within the DMZ can be public or private. In the latter case, pub-

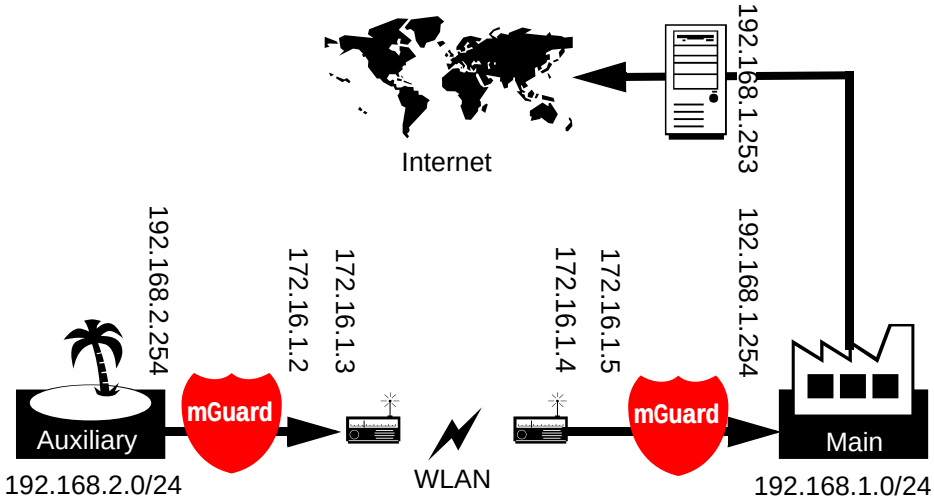
lic IPs would be mapped by means of portforwarding to the private addresses within the DMZ.

VPN Gateway



An encrypted access to the company's network is to be provided to employees at home or in the field. The mGuard thereby provides the services of a VPN gateway.
On the external computers an IPsec capable VPN client must be installed in case the computers operating system does not provide such a service.

WLAN over VPN



Two buildings of a company are to be connected with an IPsec protected WLAN connection. From the auxiliary building it shall also be possible to use the main building's internet connection.

In this example the mGuards were switched into router mode and a separate network with addresses of 172.16.1.x was created for the WLAN. Since the internet should be also available via the VPN from the auxiliary building, a "Default route over VPN" must be configured.

Auxiliary building tunnel configuration

Connection type	Tunnel (Net <-> Net)
Local network address	192.168.2.0/24
Remote network address	0.0.0.0/0

In the main building the appropriate counterpart to the connection is to be configured:

Main building tunnel configuration

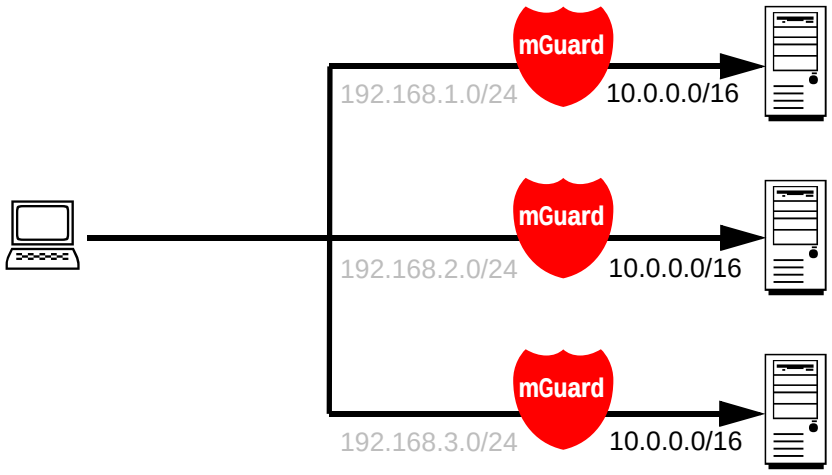
Connection type	Tunnel (Net <-> Net)
Local network address	0.0.0.0/0
Remote network address	192.168.2.0/24

The default route of an mGuard is usually directed over its WAN port. But in this case the internet is reachable via the LAN port:

Main building default gateway

IP of the default gateway	192.168.1.253

Solving Network Conflicts

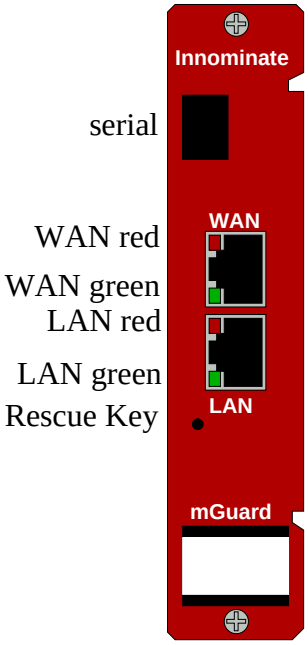


In the illustration above, it is desired that the networks on the right-hand side are accessible from the network or the computer on the left-hand side. For historical or technical reasons, however, the computer networks overlap on the right-hand side.
With the help of mGuards and their 1:1 NAT feature, these networks can be redefined so that the conflict is solved.

(1:1 NAT can be used in normal routing and in IPsec VPN tunnels.)

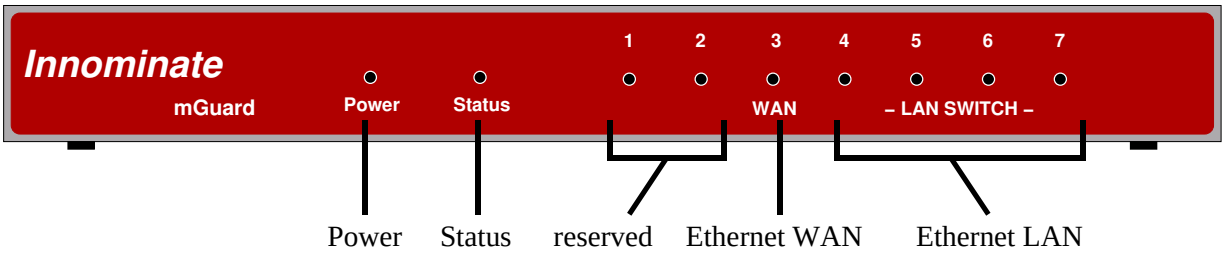
3 Control and LEDs

3.1 mGuard blade



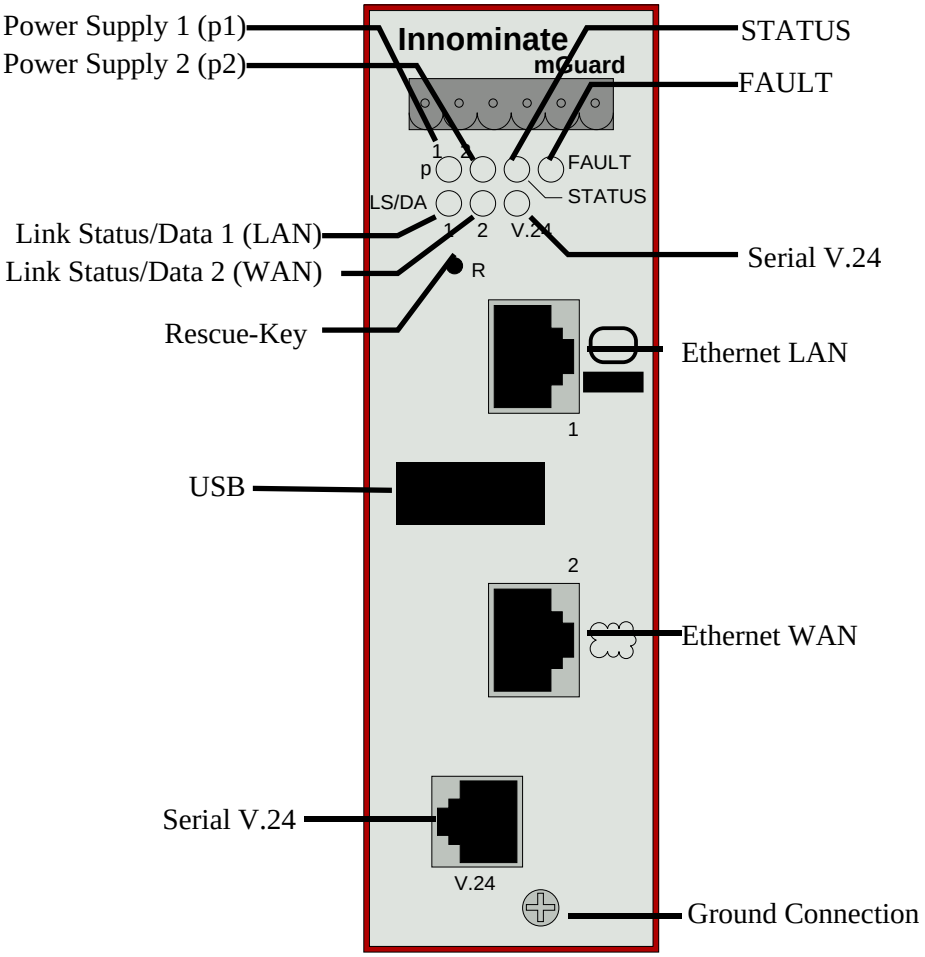
	State	Meaning
WAN Red, LAN Red	flashing	**Booting up**. After starting or restarting the computer.
WAN Red	flashing	**System error**. ⌦ Perform a system restart. To accomplish this, briefly press the Rescue button (1.5 sec.) If the error occurs again, start the *Recovery procedure* (see “Performing a Recovery” on page 137) or contact Support.
WAN Green, LAN Green	on or flashing	**Ethernet status**. Shows the status of the LAN and WAN interface. As soon as the device is connected to the network, the LEDs will be on continuously to indicate that there is a connection. The LEDs will flash when data packets are transferred.
WAN Green, WAN Red, LAN Green	various LED codes	**Recovery mode**. After pressing the **Rescue key** See “The Rescue Button – restart, recovery procedure and to flash the firmware” on page 137.

3.2 mGuard delta



LEDs	State	Meaning
Power	on	The power supply is active.
Status	on	The mGuard is booting.
	heartbeat (flash, flash, pause, ...)	The mGuard is ready.
1,2	-	Reserved.
3 (WAN)	on	Link detected.
	flashing	Data transfer.
4-7 (LAN)	on	Link detected.
	flashing	Data transfer.

3.3 EAGLE mGuard

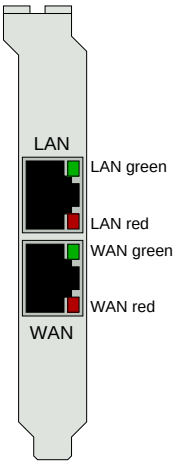


LEDs	State	Meaning
p1, p2	green	The power supply 1 or 2 is active.
STATUS	green flashing	The mGuard is booting.
	green	The mGuard is ready.
	yellow	The mGuard is ready and Redundancy Master.
	yellow/green flashing	The mGuard is ready and Redundancy Slave.
FAULT	red	The signal contact is open in case of an error.
LS/DA 1/2 **V.24**	green	Link detected.
	yellow flashing	Data transfer.

3.4 mGuard smart

LEDs	Colour	State	Meaning
2	Red/Green	red/green flashing	**Booting up**. After connecting the device to the power supply. After a few seconds, the LED will switch to a heartbeat.
	Green	flashing	**Heartbeat**. The device is correctly connected and functioning.
	Red	flashing	**System error**. ⌧ Perform a system restart. To accomplish this, briefly press the **Rescue key** (1.5 sec.) OR Disconnect the device from its power supply briefly and then reconnect it. If the error occurs again, start the *Recovery procedure* (see “Performing a Recovery” on page 137) or contact Support.
1 and **3**	Green	on or flashing	**Ethernet status**. LED 1 shows the status of the internal interface (LAN), LED 3 the status of the external interface (WAN). As soon as the device is connected to the interface, the LED will be on continuously to indicate that there is a connection to the network. The LEDs will flash when data packets are transferred.
1, 2, 3	various LED codes		**Recovery mode**. After pressing the **Rescue key** See “The Rescue Button – restart, recovery procedure and to flash the firmware” on page 137.

3.5 mGuard PCI



LEDs	State	Meaning
WAN Red, LAN Red	flashing	**Booting up**. After starting or restarting the computer.
WAN Red	flashing	**System error**. ⌧ Perform a system restart. To accomplish this, briefly press the **Rescue key** (1.5 sec.) OR Restart your computer. If the error occurs again, start the *Recovery procedure* (see “Performing a Recovery” on page 137) or contact Support.
WAN Green, LAN Green	on or flashing	**Ethernet status**. Shows the status of the LAN and WAN interface. As soon as the device is connected to the network, the LEDs will be on continuously to indicate that there is a connection. The LEDs will flash when data packets are transferred.
WAN Green, WAN Red, LAN Green	various LED codes	**Recovery mode**. After pressing the **Rescue key** See “The Rescue Button – restart, recovery procedure and to flash the firmware” on page 137.

4 Startup

Safety instructions

The Innominate mGuard is intended for (protective) low voltage operation. Only connect the mGuard's network interfaces to LAN installations. Some telephone lines also use RJ45 jacks. The mGuard must not be operated on a telephone line.

Warning mGuard PCI! Before handling the mGuard PCI, touch the bare metal case of your PC to discharge static electricity from your body.

Warning! This is a Class A device. It may cause radio interference in a living area, in which case, the operator may be requested to take appropriate measures.

General notes regarding usage

- mGuard PCI: Your PC must provide a free PCI slot (3.3V or 5V).
- Use a soft cloth to clean the case of the device. Do not use any aggressive solvents!
- Environmental conditions:
  0 to +40°C (blade, smart, delta), 70°C (PCI), 55°C (EAGLE mGuard)
  max. 90% (EAGLE mGuard: 95%), non-condensing humidity
- To avoid overheating, do not leave it in direct sunlight or expose it to any other source of heat.
- Do not bend the cables sharply. Only use network cables to connect to a network.

Steps for starting up the device

To startup the device, perform the following steps in the order listed:

Step	Objectives	Page
1	Check the package contents and read the Release Notes	"Included in the package" on page 17
2	Connect the Device	"Connect the mGuard blade" on page 19 "Connect the mGuard delta" on page 21 "Connect the EAGLE mGuard" on page 22 "Connect the mGuard smart" on page 24 "Connect the mGuard PCI" on page 25
3	Configure the device to the extent necessary. To accomplish this, select from the various options offered in the mGuard's configuration menus. For more information regarding which options and settings are required (or desirable) for your operating environment, please read the relevant sections in this manual.	"Local Configuration: At startup" on page 34

Included in the package

Before beginning to setup the device, check that the package is complete:

- an *mGuard blade*, *delta*, *smart*, *PCI* or *EAGLE mGuard*
- a manual in the Portable Document Format (PDF) on the CD-ROM
- a Quick Installation Guide

The mGuard bladePack also contains:

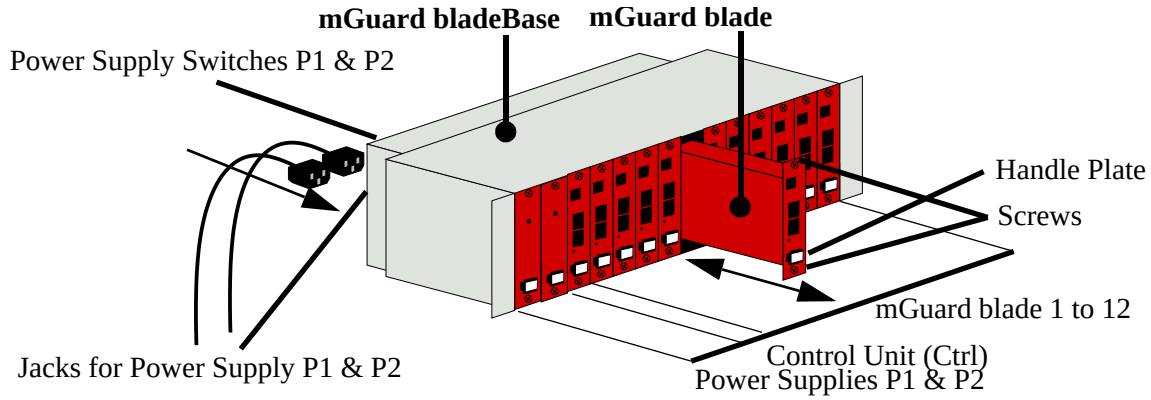
- the 19'' mguardBlade base
- an mGuard blade as controller
- 2 power supplies
- 2 power cables

- 12 place holders
- 12 handle plates M1 to M12
- screws to install the bladeBase

The mGuard delta also contains:

- the 5V DC power supply
- two UTP ethernet cables
- a RS232 serial cable

4.1 Connect the mGuard blade



Installing mGuard bladeBase

- Install the mGuard bladeBase into the rack, e.g. close to the patch panel.
- Provide the two power supplies and the control unit at their front from the left to the right with the handle plates “P1”, “P2” and “Ctrl”.
- Connect both power supplies on the back of the mGuard bladeBase with 100V or 220/240V.
- Switch both power supplies on.
- The LEDs at the front of the power supplies flash now green.

⌧ **It is necessary that a sufficient air circulation through the bladePack is guaranteed!**

⌧ **When stacking several bladePacks, one or more 19'' rack mount fan trays must be installed to exhaust the accumulated warm air!**

Installing mGuard blade

- Loosen the upper and lower screws of the place holder or mGuard blade you want to replace.
- Remove the place holder or pull the old mGuard blade out of the bladeBase.
- Insert the new mGuard blade with its circuit board into the bladeBase's plastic guidance and push until it is completely inside.
- Secure the mGuard blade by light tightening of the upper and lower screws.
- Replace the empty handle plate with the suitable number from the mGuard bladeBase accessories or the old mGuard blade, by shoving it in or out latteraly.

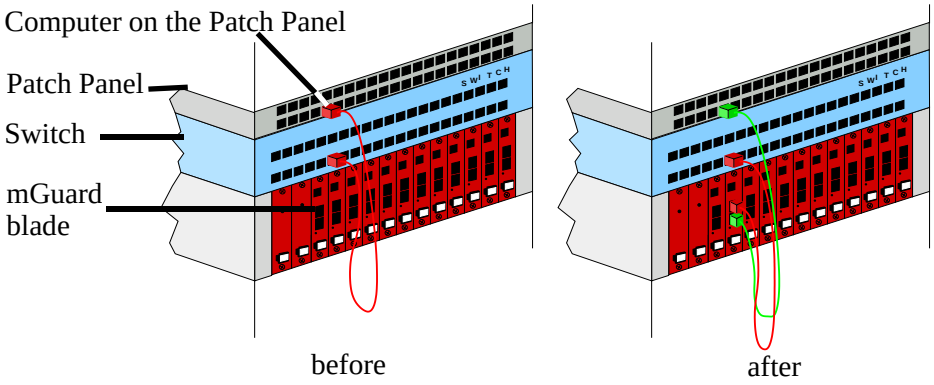
⌧ During installation or removal of an mGuard blade the bladeBase does not need to be switched of.

Control Unit (CTRL Slot)

Next to the two current supplies is the “CTRL” Slot. An mGuard blade operated therein works as a controller for all other mGuard blades.
During an mGuard blade’s first installation into the “CTRL” slot, the blade reconfigures itself into an control unit:

- The web interface is reconfigured to operate as a control unit.
- It switches itself into router mode with the local IP address 192.168.1.1.
- The firewall, Anti-Virus and VPN services are reset and deactivated.

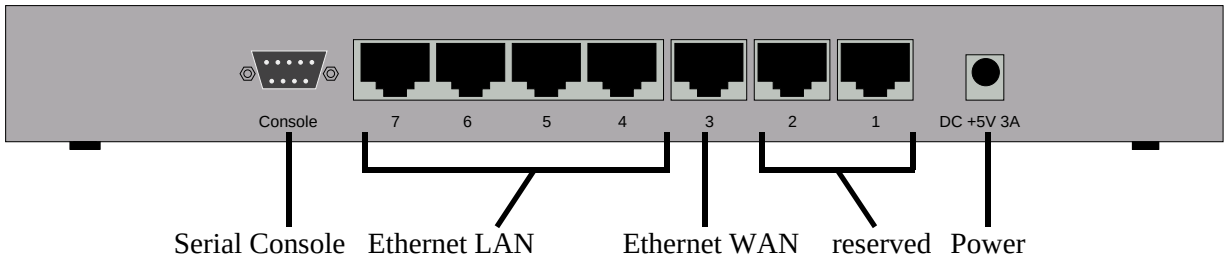
Connecting mGuard blade



If your computer is already attached to a network, then you just need to patch the mGuard blade between the already existing network connection. Please note that the initial configuration can only be done using the LAN connector and that the firewall is rejecting all IP traffic from the WAN to the LAN interface.

- No additional driver needs to be installed.
- For reasons of security, we recommend that you change the default Root and Administrator passwords during the first configuration.

4.2 Connect the mGuard delta

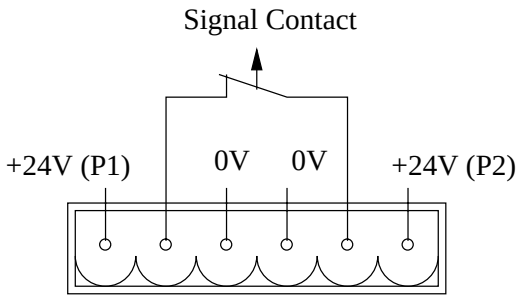


- Connect the power supply (5V DC, 3A) to the mGuard’s power jack.
- Connect the local computer or network to one of the Ethernet LAN jacks (4 to 7) with an UTP (CAT5) ethernet cable.

4.3 Connect the EAGLE mGuard

Terminal block

The **supply voltage** and the **signal contact** are connected via a 6 pin terminal block with screw locking mechanism.



Warning!
The EAGLE mGuard is designed for operation with a safe extra-low voltage.Thus its power supply and signal contact connectors may only be connected with PELV circuits or, alternatively, SELV circuits with voltage restrictions in accordance with IEC/EN 60950.

Operating voltage

NEC Class 2 power source 12VDC or 24 VDC (-25% +33%) safe extra-low voltage (SELV/PELV, redundant inputs decoupled), 5 A maximum. Buffer time min. 10 ms at 24 VDC.

Redundant power supply

Redundant power supplies are supported. Both inputs are decoupled. There is no load distribution. With a redundant supply, only the power pack with the higher output voltage supplies the EAGLE mGuard. The supply voltage is electrically isolated from the housing.

Signal contact

The signal contact is used to supervise the functions of the EAGLE mGuard and thereby facilitates remote diagnosis. An interruption of the potential-free signal contact (relay contact, closed current circuit) indicates the following:

- The failure of at least one of the two supply voltages.
- A permanent fault on the EAGLE mGuard (internal 3.3 V DC voltage, supply voltage 1 or 2 < 9.6 V, ...).
- The faulty link status of at least one port.
  The indication of the link state on the EAGLE mGuard can be masked on a port-by-port basis using the management software.
  State of delivery: there is no link test.
- Self test error.

⌦ In case of a non-redundant voltage supply, the EAGLE mGuard will indicate the failure of the supply voltage. You can correct this by connecting the supply voltage to both inputs.

Ground connection

The EAGLE mGuard is grounded with a separate screw connection.

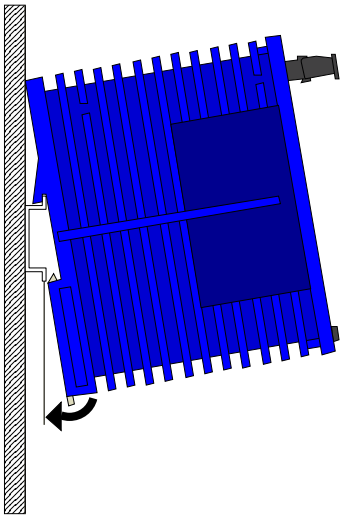
Assembly

The equipment is delivered in a ready-to-operate condition. The following procedure is appropriate for assembly:

- Pull the terminal block off the EAGLE mGuard and wire up the supply voltage and signal contact lines.
- Fit the EAGLE mGuard on a 35 mm standard bar to DIN EN 50 022.
- Attach the upper snap-on slide bar of the EAGLE mGuard to the standard bar

and press it down until it locks into position.

- Connect the device to the local network or the local PC which is to be protected (LAN).
- Connect the socket for connection to the external network (WAN), e.g. the Internet. (Via this network the connctions to the remote device or the remote network are realized.)



⌦ The front panel of the EAGLE mGuard is grounded via a separate ground connection.
⌦ Do not open the housing.
⌦ The shielding ground of the twisted pair lines which can be connected is electrically connected to the front panel.

Startup procedure

You do start up the EAGLE mGuard by connecting the supply voltage via the 6-pin terminal block. Lock the terminal block with the locking screw at the side.

Network connection

If your computer is already attached to a network, then you just need to patch the mGuard between the already existing network connection. Please note that the initial configuration can only be done using the LAN connector and that the firewall is rejecting all IP traffic from the WAN to the LAN interface.

⌦ No additional driver needs to be installed.
⌦ For reasons of security, we recommend that you change the default Root and Administrator passwords during the first configuration.
⌦ Both ports of the mGuard are configured to be connected to a computer. If you connect the ports to a hub, please note that if *Autonegotiation* (See “MAU Configuration” on page 81.) is disabled, then the Auto-MDIX will also be deactivated, i.e. the port of the EAGLE mGuard has to be connected either to the uplink port of the hub or a cross-link cable has to be used.

Dismantling

To take the EAGLE mGuard off the ISO/DIN rail, insert a screwdriver horizontally under the housing into the locking slide, pull it (without tipping the screwdriver) downwards and lift the EAGLE mGuard upwards.

4.4 Connect the mGuard smart

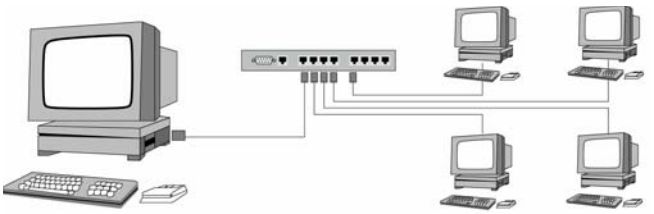
Ethernet plug to connect the unit directly to the system or network to be protected (**local** system or network).

USB connector to connect the unit to a computer's USB interface. Only used to supply power.

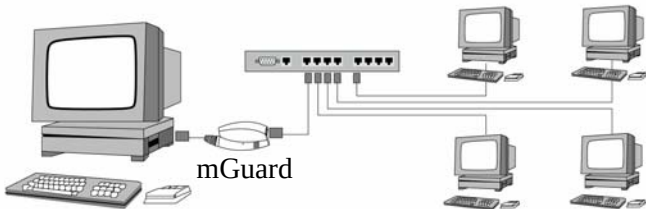
Jack for connecting an external network, e.g. WAN, Internet. (Connections to remote devices or networks are established via this network.)
Use a UTP cable (CAT 5).

If your system is already connected to a network, simply insert the mGuard between the system's network interface and the network.

before:



after:



- No additional driver needs to be installed.
- For reasons of security, we recommend that you change the default Root and Administrator passwords during the first configuration.

4.5 Connect the mGuard PCI

4.5.1 Choice between Driver mode or Power-over-PCI mode

There are two operating modes: *Driver mode* or *Power-over-PCI mode*.
The mGuard is switched to operate in the desired mode via a jumper.

Driver mode:
The mGuard PCI can be used like a regular network card, enabling this network card to also provide the mGuard functions. In this case the included driver must be installed.

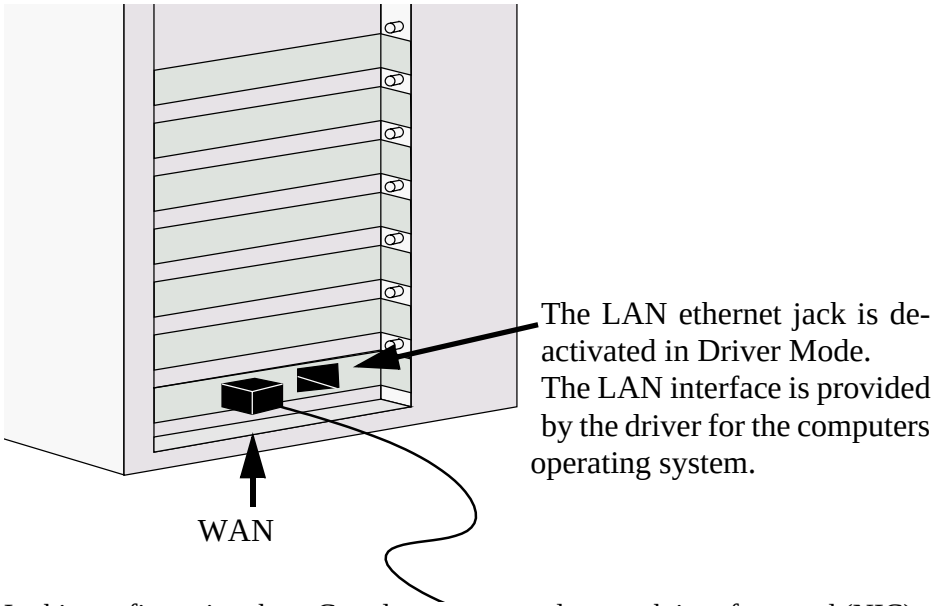
Power-over-PCI mode:
If the mGuard's network card functionality isn't needed or won't be used, then the mGuard PCI can be connected behind an existing network card (of the same computer or of another one), essentially acting as an mGuard standalone device. In this operating mode, in fact, the mGuard PCI is only plugged into the computer's PCI slot to be supplied with power and given a housing. This mGuard operating mode is called *Power-over-PCI mode*. No driver needs to be installed.

Decide in which mode you want the mGuard PCI to operate before installing it in your PC.

Driver Mode

In this mode a driver for the PCI interface of the mGuard PCI (available for Windows XP/2000 and Linux) needs to be installed later on the computer. In Driver Mode another network card is not required in the computer.

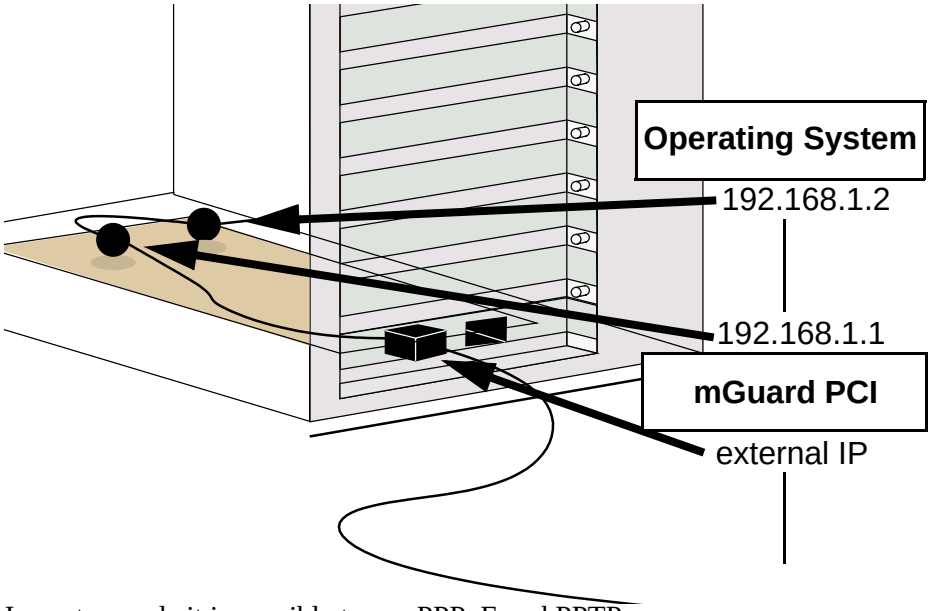
Stealth Mode with Driver Mode (Factory default)


The LAN ethernet jack is de-activated in Driver Mode.
The LAN interface is provided by the driver for the computers operating system.
WAN

In this configuration the mGuard acts as normal network interface card (NIC) with additional security features and requires a driver for the host operating system. The IP address can be configured using the network utilities of the operating system.
As soon as an external router is available the mGuard can be configured using a webbrowser at the URL https://1.1.1.1/.

⌧ In Stealth Mode it is not possible to use PPPoE or PPTP.

Router Mode with Driver Mode

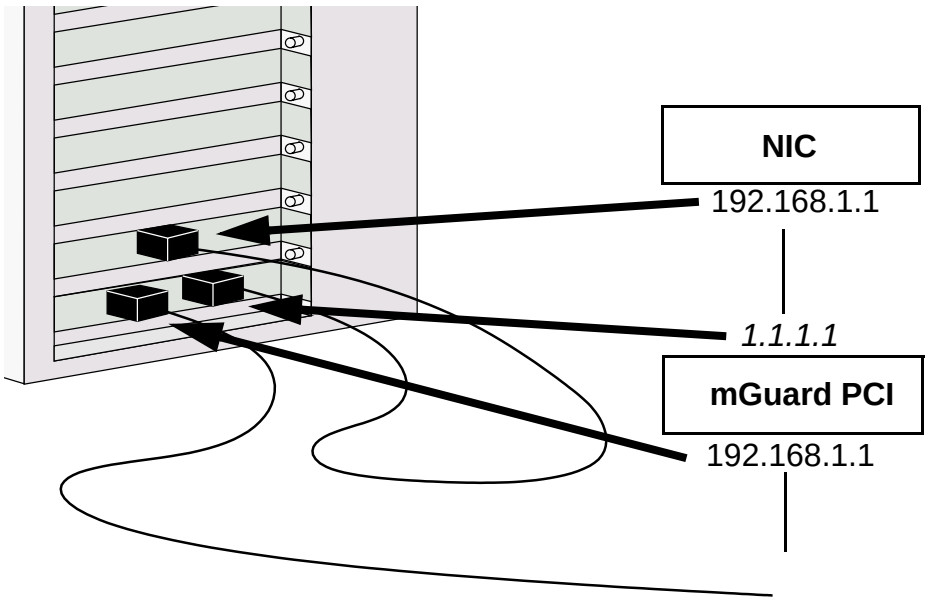


In router mode it is possible to use PPPoE and PPTP.
In this mode the mGuard and the network interface of the mGuard use a separate subnet. An example is shown in the illustration above: the mGuard's operating systems interface could use the IP 192.168.1.1 and the mGuard could use the IP 192.168.1.2. (Represented in the figure above by two black spheres.)
A third IP will be used on the WAN jack to communicate with a router or a PPPoE/PPTP capable DSL modem.

Power-over-PCI Mode

In this mode the software driver is not needed. The PCI interface is only used as a power supply and another network interface card, installed in the same or another computer, must be connected to the ethernet jack (3) instead.

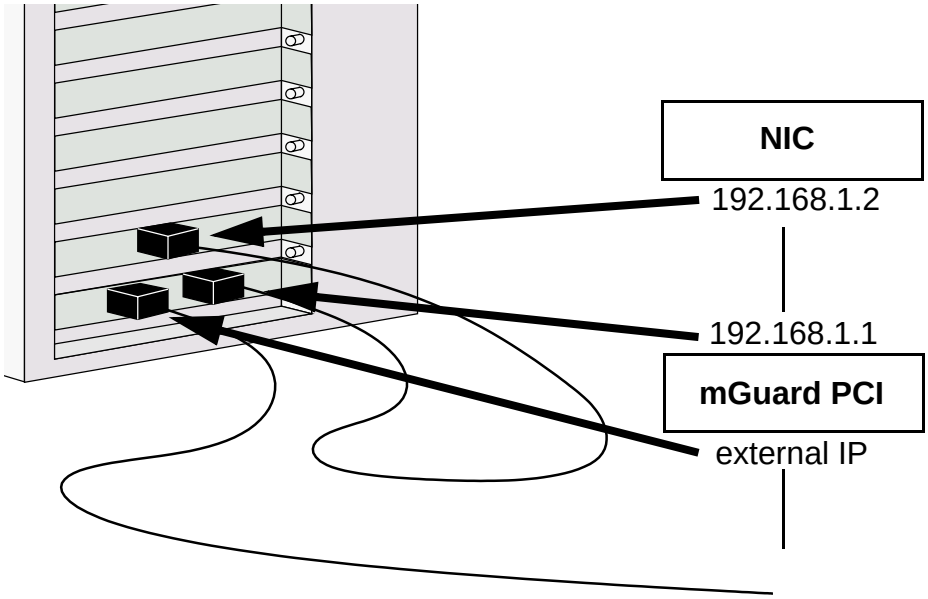
Stealth Mode with Power-over-PCI Mode



In Power-over-PCI Mode the mGuard does not require a driver for the host operating system. The PCI bus is only used as a power supply. The LAN jack of the mGuard must be connected to another NIC using an ethernet cable. At the WAN jack the mGuard automatically uses the IP address of the other network interface card.
As soon as an external router is available the mGuard can be configured with a

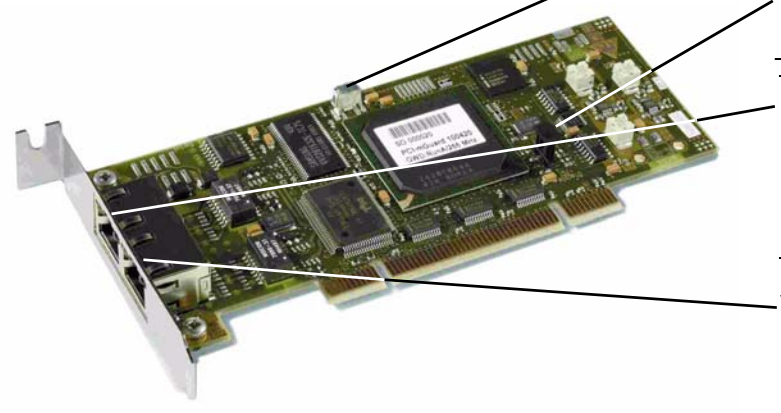
webbrowser at the URL https://1.1.1.1/.
⌧ In Stealth Mode it is not possible to use PPPoE or PPTP.

Router Mode with Power-over-PCI Mode



In router mode it is possible to use PPPoE and PPTP.
The mGuard and the network interface card (NIC) connected to the LAN jack use a separate subnet. E.g. the NIC could use the IP 192.168.1.1 and the mGuard's LAN jack could use the IP 192.168.1.2.
A third IP will be used on the WAN jack to communicate with a router or a PPPoE/PPTP capable DSL modem.

4.5.2 Hardware installation



1 Rescue push button

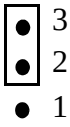
2 Jumper to enable/disable Driver Mode

3 Ethernet jack to connect the unit directly to the system or network to be protected (**local** system or network) when Driver Mode is disabled

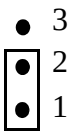
4 Jack for connecting an external network, e.g. WAN, Internet. (Connections to **remote** devices or networks are established via this network.)
Use an UTP cable (CAT 5).

1. Configure the mGuard for either Driver or Power-over-PCI mode. (See "Choice between Driver mode or Power-over-PCI mode" on page 25.)

To enable the **Driver Mode**, set the jumper (2) to the following position:



To enable the **Power-over-PCI Mode**, set jumper (2) to the following position:



2. Turn off the power to your computer and any other connected peripheral devices. Follow the precautions for static electricity discharge.
3. Unplug the power cord from the back of the computer
4. Remove the computer's cover (please consult the manual of your computer).
5. Select a free PCI slot (3.3V or 5V) for the mGuard PCI.
6. Remove the selected slot bracket by unscrewing the holding screw and slide it out. Save this screw for securing the mGuard PCI card after it's installed.
7. To install the PCI card, carefully align the board's bus connector with the selected expansion slot on the motherboard. Push the board down firmly, but gently, until it is well seated.
8. Replace the slot bracket's holding screw to secure the board to the rear slot panel.
9. Put back the computer's cover.
10. Reconnect the power cord and turn on your computer.

4.5.3 Driver installation

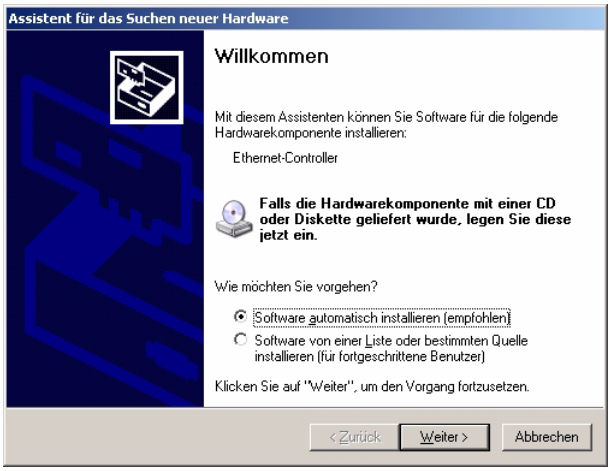
Windows XP

☞ Please complete the steps described in section "Hardware installation" on page 27 first.

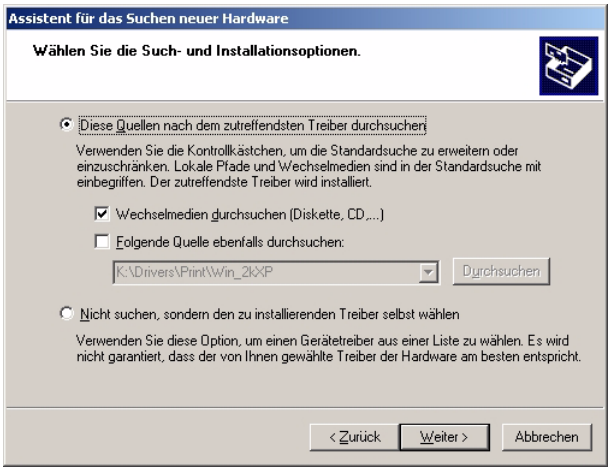
⌧ The installation of the driver is only necessary (and will only work as described) in Driver Mode (see "Driver Mode" on page 25).
⌧ The following screen shots show the german version of Windows XP.

To install the driver, switch your computer on, login with Administrator rights and wait for the following window to show up:

.


Assistent für das Suchen neuer Hardware
Willkommen
Mit diesem Assistenten können Sie Software für die folgende Hardwarekomponente installieren:
Ethernet-Controller
Falls die Hardwarekomponente mit einer CD oder Diskette geliefert wurde, legen Sie diese jetzt ein.
Wie möchten Sie vorgehen?
Software automatisch installieren (empfohlen)
Software von einer Liste oder bestimmten Quelle installieren (für fortgeschrittene Benutzer)
Klicken Sie auf "Weiter", um den Vorgang fortzusetzen.
< Zurück
Weiter >
Abbrechen

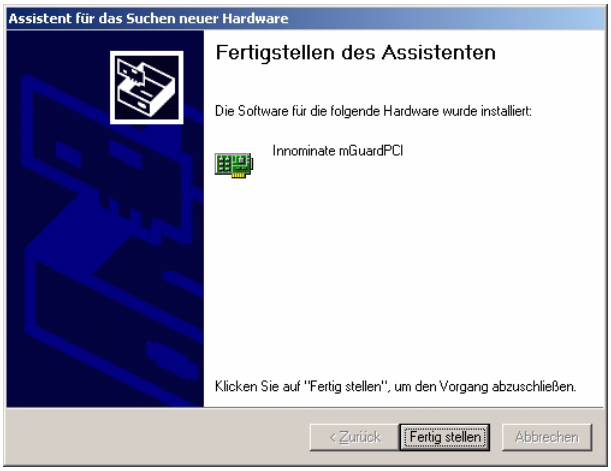
1. After inserting the mGuard-CD choose **From a list or specified location (Advanced)** and click on **Next**


Assistent für das Suchen neuer Hardware
Wählen Sie die Such- und Installationsoptionen.
Diese Quellen nach dem zutreffendsten Treiber durchsuchen
Verwenden Sie die Kontrollkästchen, um die Standardsuche zu erweitern oder einzuschränken. Lokale Pfade und Wechselmedien sind in der Standardsuche mit einbegriffen. Der zutreffendste Treiber wird installiert.
Wechselmedien durchsuchen (Diskette, CD,...)
Folgende Quelle ebenfalls durchsuchen:
K:\Drivers\Print\Win_2kXP
Durchsuchen
Nicht suchen, sondern den zu installierenden Treiber selbst wählen
Verwenden Sie diese Option, um einen Gerätetreiber aus einer Liste zu wählen. Es wird nicht garantiert, dass der von Ihnen gewählte Treiber der Hardware am besten entspricht.
< Zurück
Weiter >
Abbrechen

2. Click on **Next**

Hardwareinstallation
Die Software, die für diese Hardware installiert wird:
Innominate mGuardPCI
hat den Windows-Logo-Test nicht bestanden, der die Kompatibilität mit Windows XP überprüft. (Warum ist dieser Test wichtig?)
Das Fortsetzen der Installation dieser Software kann die korrekte Funktion des Systems direkt oder in Zukunft beeinträchtigen. Microsoft empfiehlt strengstens, die Installation jetzt abzubrechen und sich mit dem Hardwarehersteller für Software, die den Windows-Logo-Test bestanden hat, in Verbindung zu setzen.
Installation fortsetzen
Installation abbrechen

3. Click on **Continue anyway**


Assistent für das Suchen neuer Hardware
Fertigstellen des Assistenten
Die Software für die folgende Hardware wurde installiert:
Innominate mGuardPCI
Klicken Sie auf "Fertig stellen", um den Vorgang abzuschließen.
< Zurück
Fertig stellen
Abbrechen

4. Click on **Finish**

Windows 2000 ☞ Please complete the steps described in section “Hardware installation”

on page 27 first.

⌦ The installation of the driver is only necessary (and will only work as described) in Driver Mode (see “Driver Mode” on page 25)

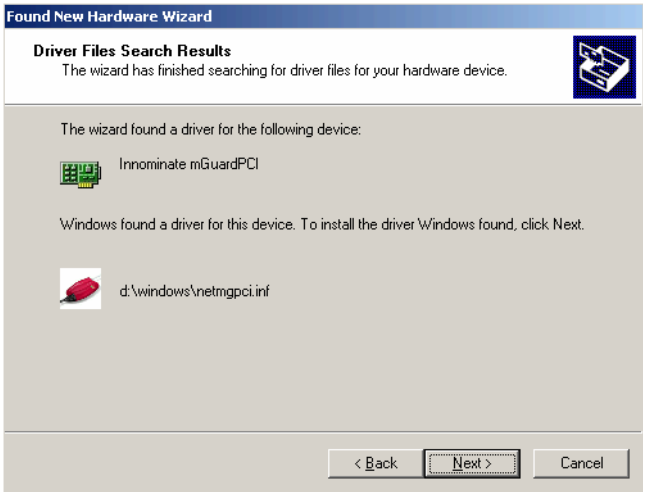
To install the driver, switch your computer on, login with Administrator rights and wait for the following window to show up:

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

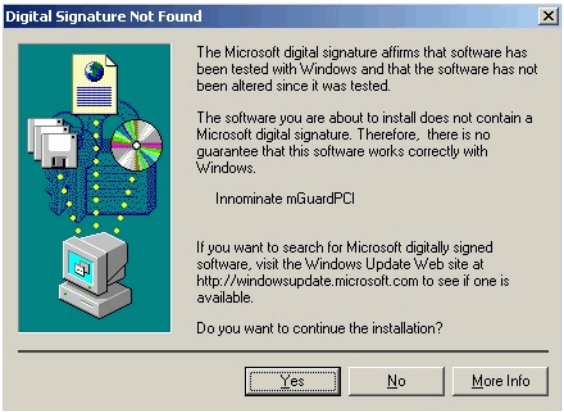
1. Click on **Next**

Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
Innominate mGuardPCI
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

2. After inserting the mGuard-CD choose **Search for a suitable driver for my device** and click on **Next**


Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Innominate mGuardPCI
Windows found a driver for this device. To install the driver Windows found, click Next.
d:\windows\netmgpci.inf
< Back
Next >
Cancel

3. Click on **Next**


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
Innominate mGuardPCI
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

4. Click on **Yes**
5. Click on **Finish**

Linux

The Linux driver is available as a source archive and must be compiled before usage. To do this:

- Build and install the kernel (2.4.26) in **/usr/src/linux**
- Unpack the driver into **/usr/src/pci-driver**
- Issue the following commands in the shell
    - **cd /usr/src/pci-driver**

        - **make LINUXDIR=/usr/src/linux**
        - **install -m0644 mguard.o /lib/modules/2.4.26/kernel/drivers/net/**
        - **depmod -a**
    - To load the driver run the following command
        - **modprobe mguard**

5 Configuration preparation

5.1 Connecting the mGuard

mGuard blade

- The mGuard blade must be installed inside the mGuard bladeBase and at least one of the bladeBases power supplies must be on.
- In a local configuration: The system that you use for performing the configuration must either be
  – connected to the LAN jack of the mGuard blade,
  – or connected to it via the local network.
- In the case of a remote configuration: The mGuard must be configured to permit remote configuration.
- The mGuard must be connected, i.e. the required connections must function.

mGuard delta

- The mGuard must be connected to its power supply.
- In a local configuration: The system that you use for performing the configuration must either be
  – connected to the mGuard's LAN switch (ethernet jack 4 to 7)
  – or connected to it via the local network.
- In the case of a remote configuration: The mGuard must be configured to permit remote configuration.
- The mGuard must be connected, i.e. the required connections must function.

EAGLE mGuard

- The EAGLE mGuard must be connected to an active power supply.
- In a local configuration: The system that you use for performing the configuration must either be
  – connected to the LAN jack of the mGuard,
  – or connected to it via the local network.
- In the case of a remote configuration: The mGuard must be configured to permit remote configuration.
- The mGuard must be connected, i.e. the required connections must function.

mGuard smart

- The mGuard must be connected to a power-supply. In other words, its USB cable must be connected to a system (or power supply) that is ON.
- In a local configuration: The system that you use for performing the configuration must either be
  – connected to the mGuard's Ethernet plug,
  – or connected to it via the local network.
- In the case of a remote configuration: The mGuard must be configured to permit remote configuration.
- The mGuard must be connected, i.e. the required connections must function.

mGuard PCI

- In a local configuration: The system that you use for performing the configuration must either be
  – equipped with the mGuard drivers when using the Driver Mode or
  – connected to it via the LAN Ethernet connector when using the Power-over-PCI mode.
- In the case of a remote configuration: The mGuard must be configured to permit remote configuration.
- The mGuard must be connected, i.e. the required connections must function.

5.2 Local Configuration: At startup

The mGuard is configured using a Web browser, which is running on the configuration system (e.g. Firefox, MS Internet-Explorer or Safari)
⌧ The Web browser must support SSL (in other words https).

By default (factory settings), the mGuard is accessible at the following address:

Factory setting:

Stealth Mode: (default setting except mGuard delta and blade controller)	https://1.1.1.1/
Router Mode: (default setting on mGuard delta and blade controller)	https://192.168.1.1/

5.2.1 mGuard blade, EAGLE mGuard und mGuard smart

With a configured network interface

In order for the mGuard to be accessed via the address https://1.1.1.1/, it must of course first be connected to a configured network interface. This is the case, if you insert it into an existing network connection - see the illustration in the section

- “Connect the mGuard blade” on page 19
- “Connect the EAGLE mGuard” on page 22
- “Connect the mGuard smart” on page 24.

In this case the Web browser can access the mGuard's configuration interface at the address https://1.1.1.1/ - see “Setting Up a Local Configuration Connection” on page 39. Continue from this point onwards in this case.

Without a configured network interface

If the computer’s network interface has not yet been configured

If the system, which will be used to configure the device, was not previously connected to a network, e.g. because the computer is new, its network interface will generally not be configured yet. This means that the system has not yet “been informed” that network traffic should be handled by this interface.

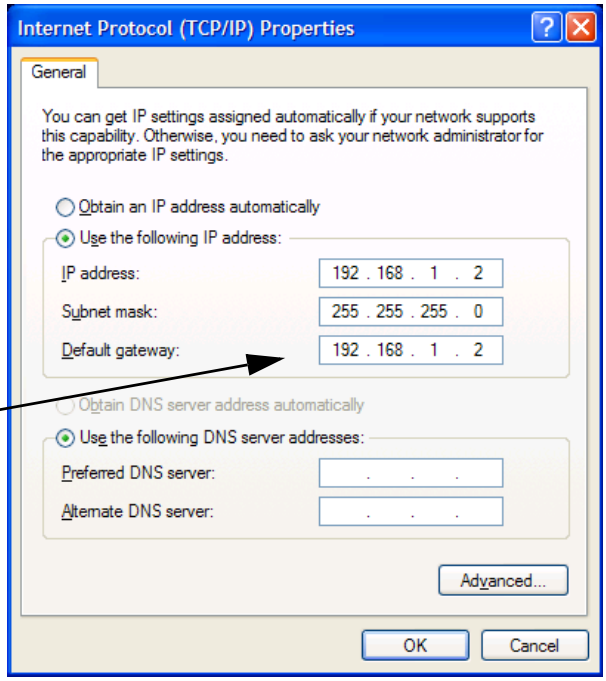
In this case, you must initialize the default gateway by assigning it a dummy value. To accomplish this, proceed as follows:

Initializing the default gateway

1. Determine the currently valid default gateway address.
   If you are using Windows XP, click on **Start, Control Panel, Network Connections**: Right click on the icon of the LAN adapter and then click on **Properties** in the pop-up menu. In the dialog *Internet Protocol Properties* on the *General* tab, select **Internet Protocol (TCP/IP)** under “This connection

uses the following items” and then click on the **Properties** button to open the following dialog:

The IP address of the default gateway can be examined or set here.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 . 2
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
192 . 168 . 1 . 2
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

If no IP address has been entered for the default gateway in this dialog box, e.g. because *Obtain an IP address automatically* has been activated, enter the IP address manually. To do so, first activate **Use the following IP** and then enter, as an example, the following addresses:

IP address:	192.168.1.2
Subnetwork mask:	255.255.255.0
Default gateway:	192.168.1.1

⌧ Do not under any circumstance assign the configuration system an address like 1.1.1.2!

2. On the DOS level (**Start, Programs, Accessories, Command Prompt**), enter:

   `arp -s` <IP of the default gateway> **`aa-aa-aa-aa-aa-aa`**

   Example:

   You have determined that the address of the default gateway is [or you have set it to]: 192.168.1.1

   Then the command should be:

   `arp -s 192.168.1.1 aa-aa-aa-aa-aa-aa`

3. To proceed with the configuration, first establish the necessary connection - see “Setting Up a Local Configuration Connection” on page 39.

4. After setting the configuration, restore the original setting for the default gateway address. To do so, either restart the configuration computer or enter the following command at the DOS level [in the Command Prompt window]:

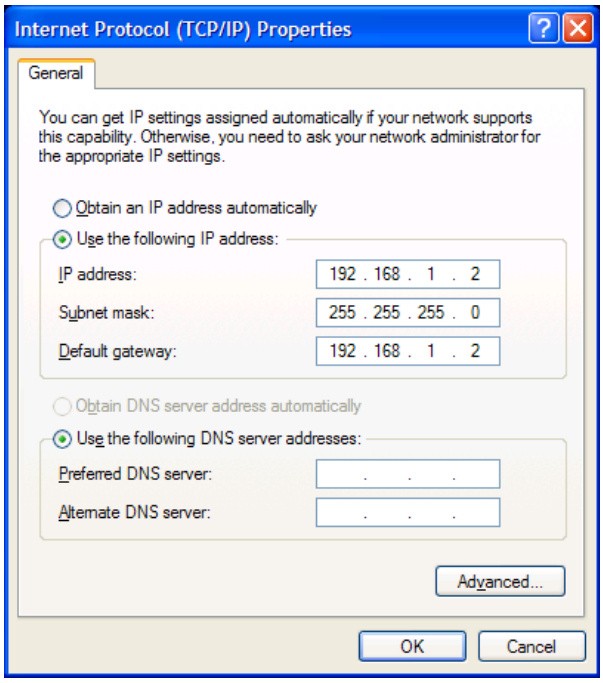
   `arp -d`

5.2.2 mGuard delta

The mGuard delta’s initial IP address on the LAN interfaces 4 to 7 is 192.168.1.1 within the network 192.168.1.0/24 and you may need to adjust the configuration of your computer to access it.

If you are using Windows XP, click on **Start, Control Panel, Network Connections**:

- Right click on the icon of the LAN adapter and then
- click on **Properties** in the pop-up menu.
- In the dialog *Internet Protocol Properties* on the *General* tab, select **Internet Protocol (TCP/IP)** under "This connection uses the following items" and then
- click on the **Properties** button to open the following dialog:


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 . 2
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
192 . 168 . 1 . 2
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Activate **Use the following IP** and then enter the following address:

IP address:	192.168.1.2
Subnetwork mask:	255.255.255.0
Default gateway:	192.168.1.1

⌧ Depending on how you configure the mGuard, you may also need to modify the network interface settings of the locally connected system or network accordingly.

5.2.3 mGuard PCI

Install the mGuard PCI Card

If you haven't already installed the mGuard PCI card in your computer, please follow the steps as described in "Hardware installation" on page 27.

Install the mGuard PCI Driver

If you've configured the mGuard to run in Driver Mode, make sure that you've installed the drivers as described in "Driver installation" on page 28.

Configure the Network Interface

If you

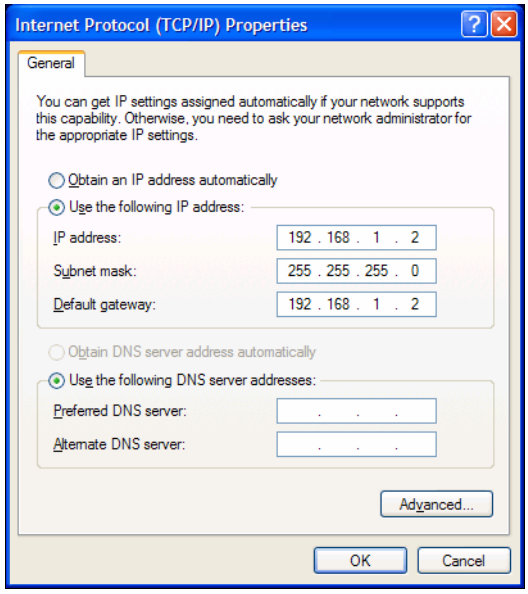
• operate mGuard in the driver mode and the LAN interface (= computer's network interface) has not yet been configured

OR

• operate mGuard in the Power-over-PCI mode and the computer's network interface, which is connected to mGuard's LAN interface, has not yet been configured, this network interface must be configured before you can configure mGuard.

If you are using Windows XP:

– Click on **Start, Control Panel, Network Connections**
– Right click on the icon of the LAN adapter
– Click on **Properties** in the pop-up menu.
– In the dialog *Internet Protocol Properties* on the *General* tab, select **Internet Protocol (TCP/IP)** under “This connection uses the following items”
– Click on the **Properties** button to open the dialog you see to the right.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 1 . 2
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 1 . 2
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

The Default Gateway

After you’ve configured the network interface, you should be able to access the mGuard’s configuration interface with a Web browser at the URL “https://1.1.1.1/”. In case this isn’t possible, then your computer’s default gateway might not be available and you must initialize the default gateway by assigning it a dummy value. To accomplish this, proceed as follows:

Initializing the default gateway

1. Determine the currently valid default gateway address. If you are using Windows XP, follow the steps described above under “Configure the Network Interface” to open the **Internet Protocol (TCP/IP) Properties** dialog box.

   If no IP address has been entered for the default gateway in this dialog box, e.g. because *Obtain an IP address automatically* has been activated, enter the IP address manually. To do so, first activate **Use the following IP** and then enter, as an example, the following addresses:

IP address:	192.168.1.2
Subnetwork mask:	255.255.255.0
Default gateway:	192.168.1.1

   ⌧ Do not under any circumstance assign the configuration system an address like 1.1.1.2!

2. On the DOS level (**Start, Programs, Accessories, Command Prompt**), enter:

   `arp -s` <IP of the default gateway> **`aa-aa-aa-aa-aa-aa`**

   Example:

   You have determined that the address of the default gateway is [or you have set it to]: 192.168.1.1

   Then the command should be:

   `arp -s 192.168.1.1 aa-aa-aa-aa-aa-aa`

3. You should now be able to access the mGuard’s configuration interface at the

URL https://1.1.1.1/. Please see “Setting Up a Local Configuration Connection” on page 39 for full details.

4. After setting the configuration, restore the original setting for the default gateway address. To do so, either restart the configuration computer or enter the following command at the DOS level [in the Command Prompt window]:

   `arp -d`

⌧ Depending on how you configure the mGuard, you may also need to modify the network interface settings of the host operating system or locally connected system accordingly.

5.3 Setting Up a Local Configuration Connection

Web-based Administrator interface

The mGuard is configured using a Web browser, which is running on the configuration system (e.g. Firefox, MS Internet-Explorer or Safari).

⌧ **The Web browser must support SSL (in other words https).**

Depending on the mGuard’s network mode (= mode of operation), it can be accessed (with the factory settings) at one of the following addresses:

Factory setting:

Stealth Mode (default setting, except mGuard delta and blade controller):	https://1.1.1.1/
Router Mode: (default setting mGuard delta and blade controller)	https://192.168.1.1/

Proceed as follows:

1. Start a Web browser.
   (For example, Firefox, MS Internet Explorer or Safari; the Web browser must support SSL (i.e. https).)
2. Make certain that the browser does not automatically dialup a connection when it is started because this could make it more difficult to establish a connection to the mGuard.
   In MS Internet Explorer, you can prevent this with the following setting: In the **Extras menu, select Internet Options...** and click on the *Connections*: tab.
   Make certain that *Never dial a connection* is selected under **Dial-up and Virtual Private Network settings**.
3. Enter the complete address of the mGuard into the browser’s address field.
   In **Stealth** mode (= factory setting except mGuard delta and blade controller) this address always is

   `https://1.1.1.1/`

   and in **Router** (= factory setting on mGuard delta and blade controller), **PPPoE** or **PPTP** mode, the factory setting for the mGuard's address is

   `https://192.168.1.1/`

The mGuard's default IP address in *Stealth* mode: **https://1.1.1.1/** and not in *Stealth* mode: **https://192.168.1.1/**

Afterwards:
The mGuard's Administrator Web page will be displayed. The security notice shown under "After a connection has been successfully setup" on page 40 will displayed.

⌧ If you have forgotten the configured address:

If the address of the mGuard – in *Router*, *PPPoE* or *PPTP* mode – has been changed to a different value and you do not know the device's current address, you must use the **Rescue** key to restore it to factory default. (see "Performing a Recovery" on page 137).

⌧ If the Administrator Web page is not displayed...

If – even after repeated attempts – the Web browser still reports that the page cannot be displayed, try the following:

- Check whether the default gateway has been initialized on the connected configuration system. See "Local Configuration: At startup" on page 34
- Try disabling any existing firewall.
- Make certain that the browser does not use a proxy server.
  In MS Internet Explorer (Version 6.0), you can prevent this with the following setting: In the **Extras menu, select Internet Options...** and click on the *Connections*: tab. Under *LAN Settings* click on the **Properties...** button and, in the *Local Area Network (LAN) Settings* dialog, check to make certain that **Use a proxy server for your LAN** (under Proxy server) is not activated.
- If any other LAN connection is active on the system, deactivate it until the configuration has been completed.
  Under the Windows **Start menu, Settings, Control Panel, Network Connections** or **Network and Dial-up Connections**, right click on the associated icon and select **Disable** in the pop-up menu.

After a connection has been successfully setup

After the connection has been successfully set up, the following security notice will be displayed (MS Internet Explorer):

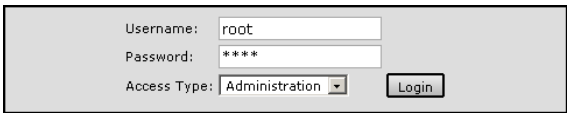
Security Alert
Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate.
The security certificate was issued by a company you have not chosen to trust. View the certificate to determine whether you want to trust the certifying authority.
The security certificate has expired or is not yet valid.
The name on the security certificate is invalid or does not match the name of the site
Do you want to proceed?
Yes
No
View Certificate

Explanation:
Since administrative tasks can only be performed when a secure (encrypted) access has been established to the device, a signed (by the device) certificate will be returned.

Acknowledge the associated security notice by clicking on **Yes**.

Afterwards:

The login window is displayed:



Choose the Access Type — Administration or User Firewall — and enter your username and password for this access type. (Please see "Network Security → User Firewall" on page 99 for an explanation of the User Firewall.)

The factory settings for the Administration are:

Login: `admin`
Password: `mGuard`

⌦ Please note, these entries are case-sensitive!

To configure the device you can make the required changes on the various pages of the mGuards web interface.
Please see "Configuration" on page 43.

⌦ For reasons of security, we recommend that you change the default Root and Administrator passwords during the first configuration - please see "User Authentication → Local Users" on page 86.

Configuring the device

1. Select the page with the desired configuration options from the menu - see Page 43.
2. Make the desired settings on the associated page.
3. Once you have confirmed the changes by clicking on **OK**, the new settings will be activated on the device.
   The system will display a confirming message.

If the changes are not shown when you open the page again, because the browser has loaded the page from a cache, reload the page to refresh the display. To do so, click on the appropriate icon in the browser toolbar.

⌦ Depending on how you configure the mGuard, you may also need to modify the network interface settings of the locally connected system or network accordingly.

5.4 Remote Configuration

Prerequisite

The mGuard must be configured to permit remote configuration.

⌦ For reasons of security, remote configuration is disabled by default.

For information on how to enable remote configuration, see section "Management → Web Settings" on page 50.

Remote configuration

To configure the mGuard from a remote computer, first establish a connection between it and the local mGuard.
Proceed as follows:

1. Start a Web browser (e.g. Firefox, MS Internet Explorer or Safari; the Web browser must support SSL (i.e. https)).
2. As the address, enter "https://" followed by the IP address or hostname under which the mGuard can be reached.

Example:
If this mGuard can be found in the Internet at the address 123.456.789.21 and the Port Number 443 has been set as the port for remote access, you must enter the following address in the Web browser’s address field on the remote system: https://123.456.789.21/. If a different Port Number is used, this must be appended to the IP address, e. g.: https://123.456.789.21:442/

6 Configuration

6.1 Operation

Screen Layout

1. Via the left-hand menu, click on the page with the desired setting possibilities, e.g. *Administration -> Licensing*. The page will then be displayed in the main window - in the form of a register card - on which you can define the settings. If necessary, the page will be organized into several register cards. You may browse through these cards using the tabs at the top.
2. On the relevant page or register card, make the desired settings. To do so, see also the subsection "What happens if inadmissible values are entered" on page 43.
3. In order to adopt the settings, click on the **Apply** button.. After the settings have been saved by the system, you will see a confirmation message. This indicates that the new settings have taken effect. They will also remain valid after a restart (reset).

What happens if inadmissible values are entered

After inadmissible values are entered (for example, an inadmissible number in an IP address) and after subsequently clicking Apply, the letters of the relevant tab card titles will be displayed in red. This helps you in tracking down the error.

Working with tables

Many settings are saved as data records. Correspondingly, the adjustable parameters and their values are presented in the form of table rows. If settings have been created for several data records (e.g. firewall rules), these will be queried or processed based on the sequence of entries from top to bottom. Therefore, if applicable, it is important to pay attention to the order of the entries. By shifting table rows either up or down, the order can be changed.

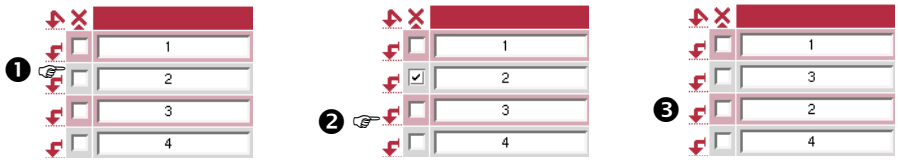
With tables, you can
– insert rows in order to set up a new data record with settings (e.g. the firewall rules for a specific connection)
– move rows (i.e. shift them to another location) and
– delete rows, in order to delete the entire data record.

Insert row

1. Click on the arrow under which you want to insert a new row:

2. Result: The new row is inserted.

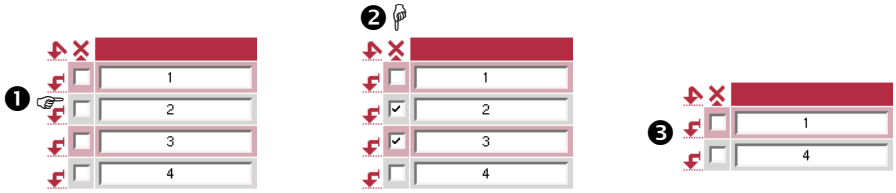
Move rows



1. Mark one or more rows you want to move.
2. Click on the arrow under which you want to move the marked rows:

3. Result: The rows are moved.

Delete rows



1. Mark the rows you want to delete.
2. Click on the symbol to delete the rows:

3. Result: The rows are deleted.

Further operating remarks

The following buttons are located in every page header:

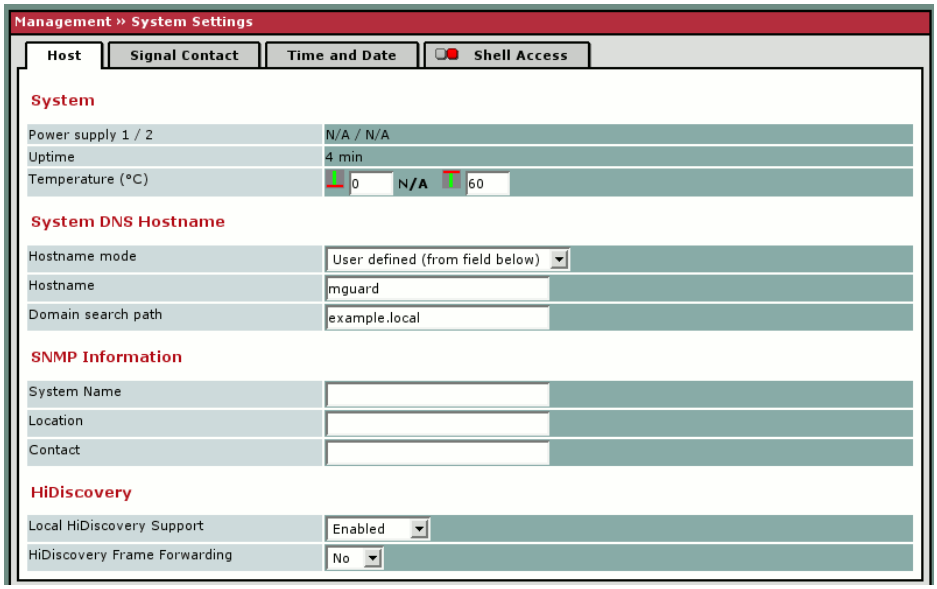
Logout	For logging out after configuration access to the mGuard. If the user does not conduct a logout procedure, the logout is automatically conducted if no more activity takes place and the timeout has expired. Renewed access is only granted after the login process has been repeated.
Reset	Optional button. Resets data to the previous values. If you have entered values on a configuration page and these haven't yet been applied, you can restore the previous values on the page by clicking the **Reset** button. This button is only included in the page header if the validity range of the **Apply** button is set to *include all pages* - see “Management → Web Settings” on page 50.
Apply	Optional button. Functions similar to the **Apply** button (see above) but is valid for all pages. This button is only included in the page header if the validity range of the **Apply** button is set to *include all pages* - see “Management → Web Settings” on page 50.

6.2 Menu Management

⌦ For reasons of security, we recommend that you change the default Root and Administrator passwords during the first configuration - see “Passwords” on page 86. As long as the passwords have not been changed, you will see a notice at the top of the page.

6.2.1 Management → System Settings

Host



System (only EAGLE mGuard)

Power supply 1/2

The state of both power supplies.

Uptime

The system uptime since the last reboot.

Temperature (°C)

If the temperature exceeds the specified range a SNMP trap is sent.

System DNS Hostname

Hostname mode

Using the *Hostname mode* and *Hostname* fields, you can assign a name to the mGuard. This will then be displayed, e.g. when logging in via SSH. The administration of multiple mGuards is simplified if you assign hostnames to them.

User defined (see below)

(Default) The name entered in the *Hostname* field is assigned to the mGuard.

☞ If the mGuard is running in *Stealth* mode, the option *User defined* must be selected under *Hostname mode*.

Provider defined (e.g. via DHCP)

If the selected network mode permits the external setting of the hostname e.g. via DHCP, the name received from the provider will be assigned to the mGuard.

Hostname

If the option *User defined* is selected under *Hostname mode*, enter the name which should be assigned to the mGuard here.

Otherwise, i.e. if the option *Provider defined (e.g. via DHCP)* is selected under *Hostname mode*, the entry in this field will be ignored.

Domain search path

This entry makes it easier for the user to specify a domain name: If the user enters the domain name in an abbreviated form, the mGuard will extend the entry by appending the domain suffix, which is defined here in the *Domain search path*.

SNMP Information

Systemname

An informational name for the mGuard, eg. “Hermes”, “Pluto”.
(sysName under SNMP)

Location

The physical location of this mGuard.
(sysLocation under SNMP)

Contact

The name of the contact person for this mGuard, together with information on how to contact this person.
(sysContact under SNMP)

HiDiscovery

HiDiscovery is a protocol which supports the initial startup of new network devices and is available in the mGuard's *Stealth* mode on the mGuard’s LAN port.

Local HiDiscovery Support

Activated

The HiDiscovery protocol is activated.

Read only

The HiDiscovery protocol is activated, but the mGuard cannot be configured through it.

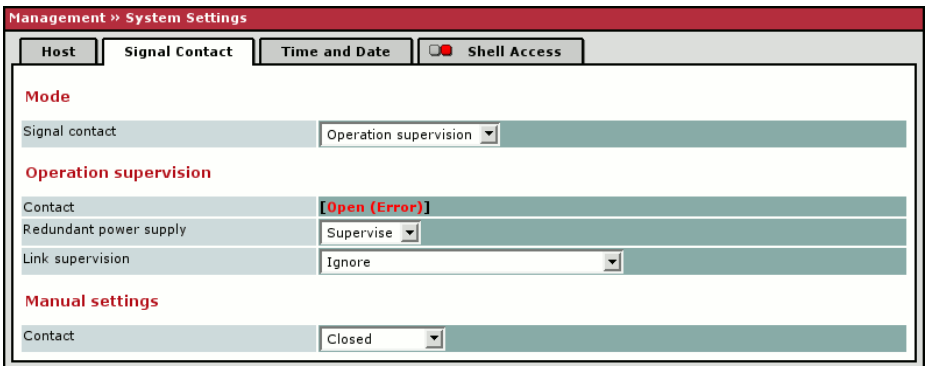
Deactivated

The HiDiscovery protocol is deactivated.

HiDiscovery Frame Forwarding

If this option is activated, then HiDiscovery frames are forwarded from the internal (LAN) interface externally (WAN).

Signal contact (only EAGLE mGuard)



The signal contact is a relais which is used by the EAGLE mGuard to signal error conditions. (See “Signal contact” on page 22.)

Mode

Signal contact

The signal contact can be controlled by the mGuard through automatic **Operation supervision** or **Manual setting**.

Operation supervision

Contact

Displays the state of the the signal contact. Either **Open (Error)** oder **Closed (Ok)**.

Redundant power supply

If set to **Ignore**, the power supply doesn't influence the signal contact. If set to **Supervise**, the signal contact will be opened if one of the power supplies fails or during permanent malfunction inside the mGuard (internal voltage of 3,3 VDC, power supply < 9,6V, ...).

Link supervision

Supervision of the ethernet interfaces link state. Possible settings are:

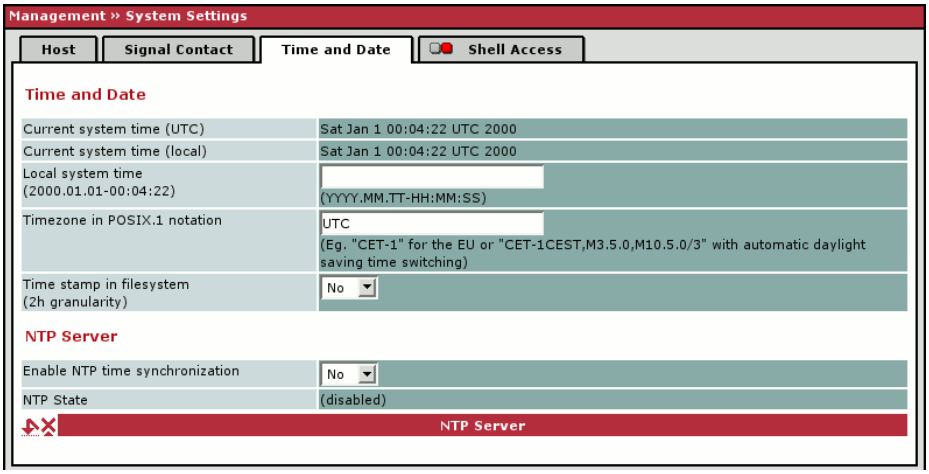
- Ignore
- Supervise only internal port (trusted)
- Supervise only external port (unntrusted)
- Supervise both ports

Manual settings

Contact

If the signal contact is set to **Manual setting**, this option sets the contact to **Closed** or **Open (Alarm)**.

Time and Date



Time and Date

Current system time (UTC)

Displays the current system time in Universal Time Coordinates (UTC). If the *Enable NTP time synchronisation* is not yet activated (see below) and *Time stamp in filesystem* is deactivated, the clock will start with January 1st 2000.

Current system time (local)

If the possibly differing current local time should be displayed, you must make the corresponding entry under *Timezone in POSIX.1 notation...* (see below).

Local system time

Here you can set the mGuard's system time in case no NTP server has been specified or the NTP server isn't reachable.

The date and time are specified in the format YYYY.MM.DD-hh:mm:

YYYY	Year
MM	Month
DD	Day
hh	Hour
mm	Minute

Timezone in POSIX.1 notation...

If the Current *system time* above should display your current local time instead of the current time (if it is different to the Greenwich Mean Time), you must enter the number of hours (plus or minus) that your local time differs from Greenwich Mean Time.

Examples:

In Germany, the time is one hour earlier than in Greenwich. Therefore, enter: CET-1.

In New York the clock is behind by five hours relative to Greenwich Mean Time. So you enter: GMT+5. The only important thing is the value -1, -2 or +1 etc., because only this will be evaluated – the preceding letters won't be. They can be substituted with "CET" or any other designation, such as "UTC".

If you wish to display Central European Time (for example for Germany) and have it automatically switch to/from daylight saving time, enter: CET-1CEST,M3.5.0,M10.5.0/3

Time stamp in filesystem (2h granularity): Yes / No

If this option is set to **Yes**, the mGuard will save the current system time to its memory every two hours.

Afterwards: If the mGuard is switched off and back on, a time from this two hour period of time will be displayed when the mGuard is switched on and not (the factory setting) a time on 1 January 2000.

NTP Server

Enable NTP time synchronisation Yes / No

Once the NTP is enabled, the mGuard queries the time from the Internet and displays this as its current system time. The synchronisation can take several seconds.

If this option is set to **Yes** and at least one time server is specified under *NTP servers to synchronize to* (see below), the current system time will be retrieved over the internet.

NTP State

Displays the current NTP state

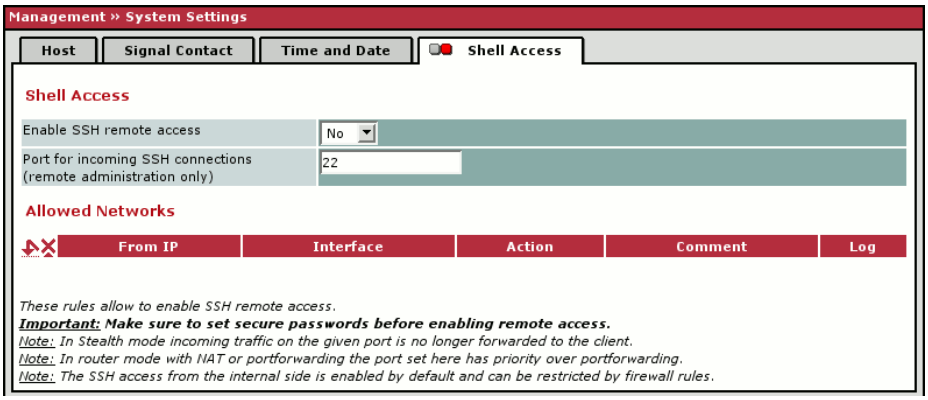
NTP server

Enter one or more time servers from which the mGuard should obtain the current time. If you enter multiple time servers, the mGuard will automatically connect with all of them to determine the current time.

☞ If you enter a hostname, e.g. pool.ntp.org, instead of an IP address, a DNS server must also be specified - see “Network → DNS” on page 81.

☞ If the mGuard is operating in *Router*, *PPPoE* or *PPTP* mode, it will also make the NTP time available to the locally connected systems.

Shell Access


Management » System Settings
Host
Signal Contact
Time and Date
Shell Access
Shell Access
Enable SSH remote access
No
Port for incoming SSH connections (remote administration only)
22
Allowed Networks
From IP
Interface
Action
Comment
Log
These rules allow to enable SSH remote access.
Important: Make sure to set secure passwords before enabling remote access.
Note: In Stealth mode incoming traffic on the given port is no longer forwarded to the client.
Note: In router mode with NAT or portforwarding the port set here has priority over portforwarding.
Note: The SSH access from the internal side is enabled by default and can be restricted by firewall rules.

Shell Access

When SSH Remote Access is enabled the mGuard can be configured from a remote system using the command line interface.
This option is disabled by default.

IMPORTANT:If you enable remote access, make certain that you have secure root and administrator passwords.

To enable SSH Remote Access, proceed as follows:

Enable SSH remote access: Yes / No

If you want to allow SSH connections, set this switch to **Yes**.

☞ In this case, make certain that the firewall rules on this page permit the mGuard be accessed from a remote site.

Port for incoming SSH connections (remote administration only)

Standard: 22

You can select a different port.

Example:

If this mGuard can be found in the Internet at the address 123.456.789.21 and the Port Number 22 has been set as the port for remote access, you do not need to enter this port number in the address field on the remote system's SSH client.

If a different port number has been set (e.g. 22222), this must be specified to the SSH client, e.g.:

ssh -p 22222 123.456.789.21

Allowed Networks

Lists the firewall rules that have been set. These apply for the incoming data packets of an SSH remote access.

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

From IP

Enter the address(es) of the system(s) that is/are allowed remote access in this field.

You have the following options for the entries:

- IP address: **0.0.0.0/0** means all addresses. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

Interface

External OR **Internal**

Specifies whether the rule applies to the external interface (= WAN port) or the internal interface (= LAN port).

The default behaviour when no rules are specified is to drop all connections on the external interface and to accept all connections on the internal interface.

Action

Possible settings:

- Accept
- Reject
- Drop

Accept means that the data packets should be passed through.

Reject means that the data packets should be rejected so that the sender is informed that the data packets have been rejected. (In *Stealth* mode, *Reject* has the same effect as *Drop*.)

Drop means that the data packets should not be passed through. The data packets will be discarded so that the sender will not be informed as to what happened to them.

☞ In Stealth mode, *Reject* is not supported.

Comment

An informational comment for this rule.

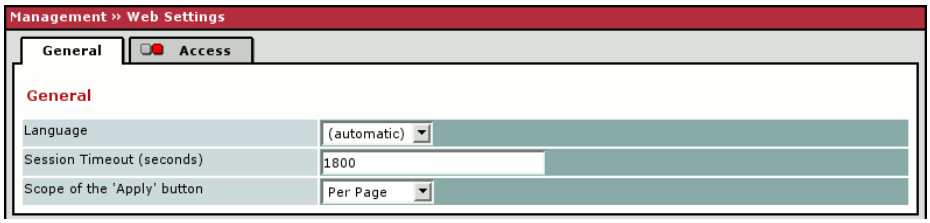
Log

You can specify - for each individual firewall rule - whether the use of the rule

- should be logged by setting - *Log* to **Yes**
- or should not be logged by setting - *Log* to **No** (factory setting).

6.2.2 Management → Web Settings

General



General

Language

If **(Automatic)** is selected from the list of languages, the device will use the language setting of the system‘s browser.

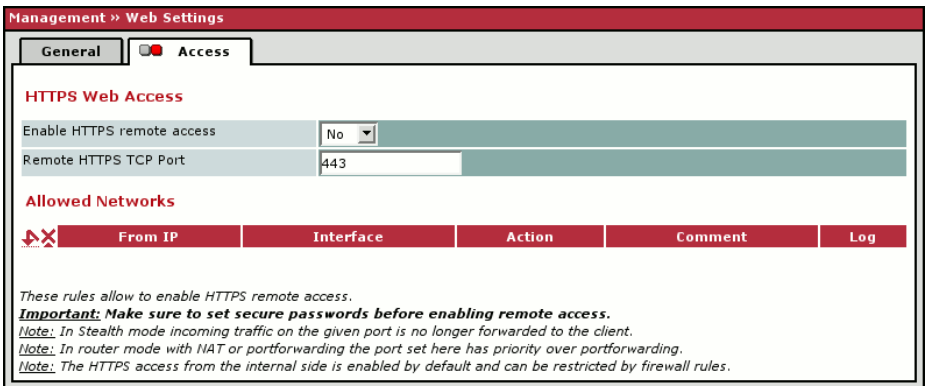
Session Timeout (seconds)

Specifies the time interval of inactivity (in seconds) after which the user will be logged out automatically. Possible values are between 15 and 86400 (= 24 hours) seconds.

Scope of the 'Apply' button

If set to **per Page**, configuration changes need to be applied per page for being stored. Otherwise (**per Session)** the configuration may be changed on several pages before being applied.

Access


Management » Web Settings
General
Access
HTTPS Web Access
Enable HTTPS remote access
No
Remote HTTPS TCP Port
443
Allowed Networks
From IP
Interface
Action
Comment
Log
These rules allow to enable HTTPS remote access.
Important: Make sure to set secure passwords before enabling remote access.
Note: In Stealth mode incoming traffic on the given port is no longer forwarded to the client.
Note: In router mode with NAT or portforwarding the port set here has priority over portforwarding.
Note: The HTTPS access from the internal side is enabled by default and can be restricted by firewall rules.

HTTPS Web Access

When HTTPS Remote Access is enabled, the mGuard can be configured – using its Web-based Administrator interface – from a remote system. In other words, a browser running on the remote system will be used to configure the local mGuard.

This option is disabled by default.

IMPORTANT:If you enable remote access, make certain that you have secure root and administrator passwords.

To enable HTTPS remote access, proceed as follows:

Enable HTTPS remote access: Yes / No

If you want to enable a HTTPS connection, set this switch to **Yes**.

☞ In this case, make certain that the firewall rules on this page permit the mGuard be accessed from a remote site.

Port for incoming HTTPS connections (remote administration only)

Standard: 443

You can select a different port.

If a different port has been selected, you must append the port number (set here) to the IP address of the device in the address provided by the remote site, which will have remote access.

Example:

If this mGuard can be found in the Internet at the address 123.456.789.21 and the Port Number 443 has been set as the port for remote access, you do not need to enter this port number after the address in the Web browser's address field on the remote system.

If a different Port Number is used, this must be appended to the IP address, e. g as follows: https://123.456.789.21:442/

Allowed Networks

Lists the firewall rules that have been set. These apply for the incoming data packets of an HTTPS access.

☞ Inserting, moving and deleting rows is explained under "Working with tables" on page 43.

From IP

Enter the address(es) of the system(s) that is/are allowed remote access in this field.

You have the following options for the entries:

- IP address: **0.0.0.0/0** means all addresses. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

Interface

External OR **Internal**

Specifies whether the rule applies to the external interface (= WAN port) or the internal interface (= LAN port).

The default behaviour when no rules are specified is to drop all connections on the external interface and to accept all connections on the internal interface.

Action

Possible settings:

- Accept
- Reject
- Drop

Accept means that the data packets should be passed through.

Reject means that the data packets should be rejected so that the sender is informed that the data packets have been rejected. (In *Stealth* mode, *Reject* has the same effect as *Drop* see below.)

Drop means that the data packets should not be passed through. The data packets will be discarded so that the sender will not be informed as to what happened to them.

☞ In Stealth mode, *Reject* is not supported.

Comment

An informational comment for this rule.

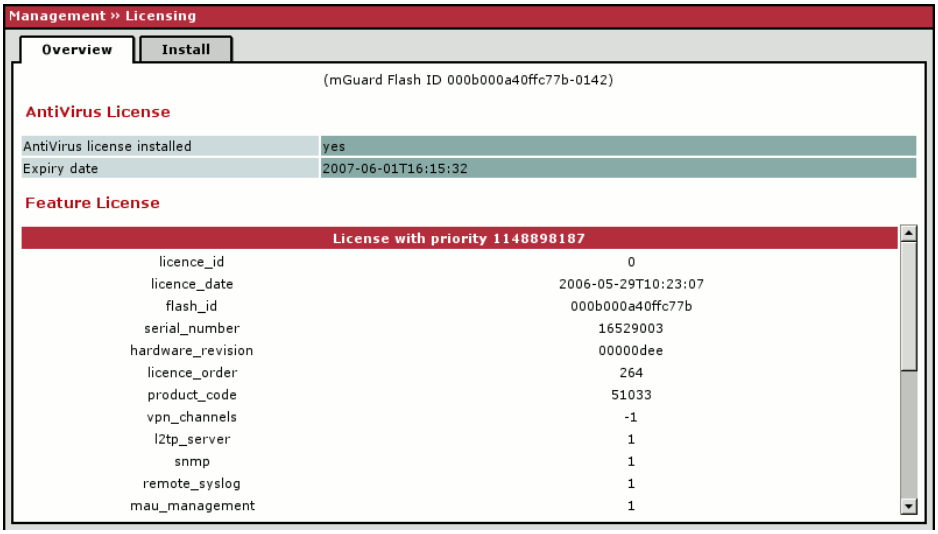
Log

You can specify – for each individual firewall rule – whether the use of the rule

- should be logged by setting - *Log* to **Yes**
- or should not be logged by setting - *Log* to **No** (factory setting).

6.2.3 Management → Licensing

Overview



AntiVirus License

Anti-Virus license installed

Here you can examine the validity of the installed AVP license.

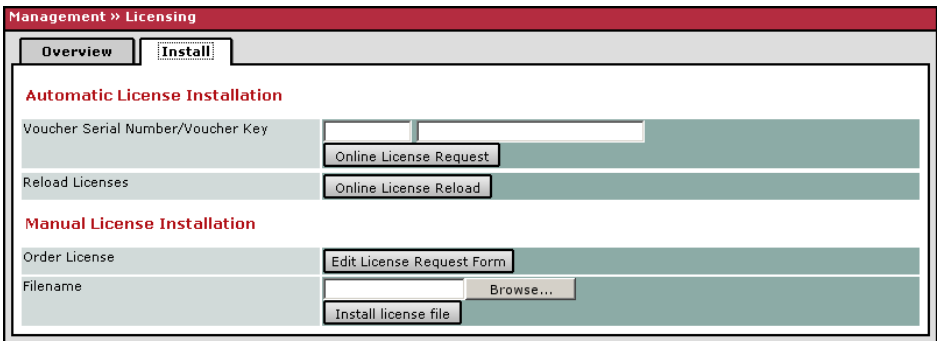
Expiry date

Shows the expiry date of your anti-virus license.

Feature License

Shows which functions are included with the mGuard license you have purchased, e.g. the number of possible VPN tunnels.

Install



With the following functions you can install new licenses on your mGuard.

Automatic license installation

Voucher Serial Number/Voucher Key

Enter here the serial number that is printed on the voucher, as well as the accompanying license key and then click

Online License Request.

Result:

mGuard now establishes a connection via the Internet and installs the respective license on the mGuard if the voucher is valid.

Restoring licenses

Use this function if the license installed in mGuard has disappeared for some reason, such as flashing the firmware. To do so, click the **Online license reload** button. The license(s) that had been issued for this mGuard previously will be retrieved from the internet and installed.

Manual license installation

After clicking the **License Request Form** button, an online form will be provided which can be used to order the desired license. In the request form, enter the following information:

Voucher Serial Number: the serial number that is printed on your voucher

Voucher Key: the license key on your voucher

Flash Id: is automatically filled in

Email Address: the email address to which the license file will be sent

After you have completed the form, the license file will be sent to the email address indicated. Under *Filename* you can apply the license file.

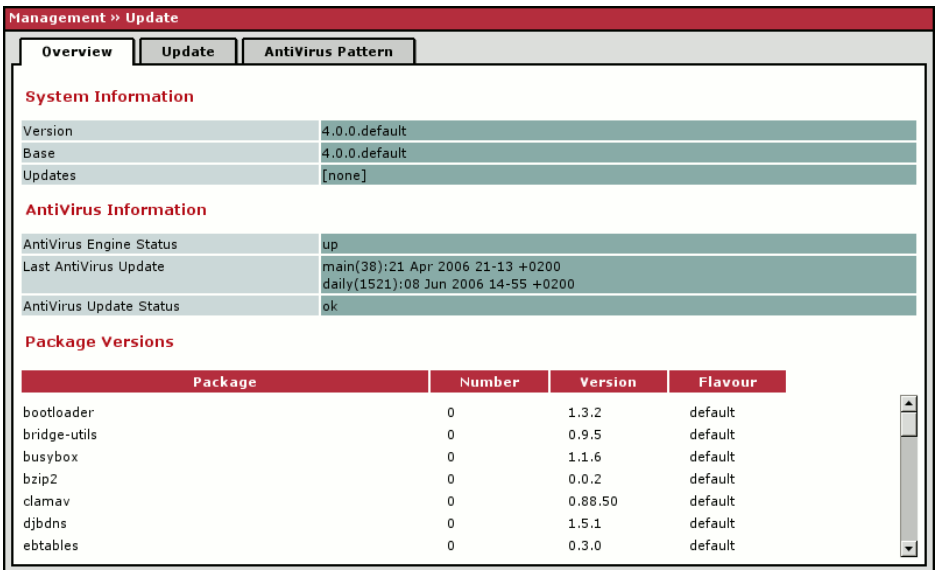
Install License

Once the license has been purchased, the license file will be sent to you as an email attachment. In order to apply the license, first save the license file as a separate file on your computer and continue as follows:

– Click the **Browse** button, select the file and open it so that the path or the file name is displayed in the *File Name* field.
– Then click the **Install License File** button.

6.2.4 Management → Update

Overview



You can examine the successful unblocking of the virus filter feature.

For the information about the expiration date of your anti-virus license please see “Management → Licensing” on page 53.

System Information

Version

The current software version of the mGuard

Base

The software version that was originally used to flash this mGuard.

Updates

List of updates that have been installed on the base.

AntiVirus Information

Anti-Virus Engine Status

Displays the state of the scan-engine. If you have activated the anti-virus protection for at least one protocol, the status will be displayed as “up”.

Last Anti-Virus Update

Diplays the current release date of the anti-virus database.

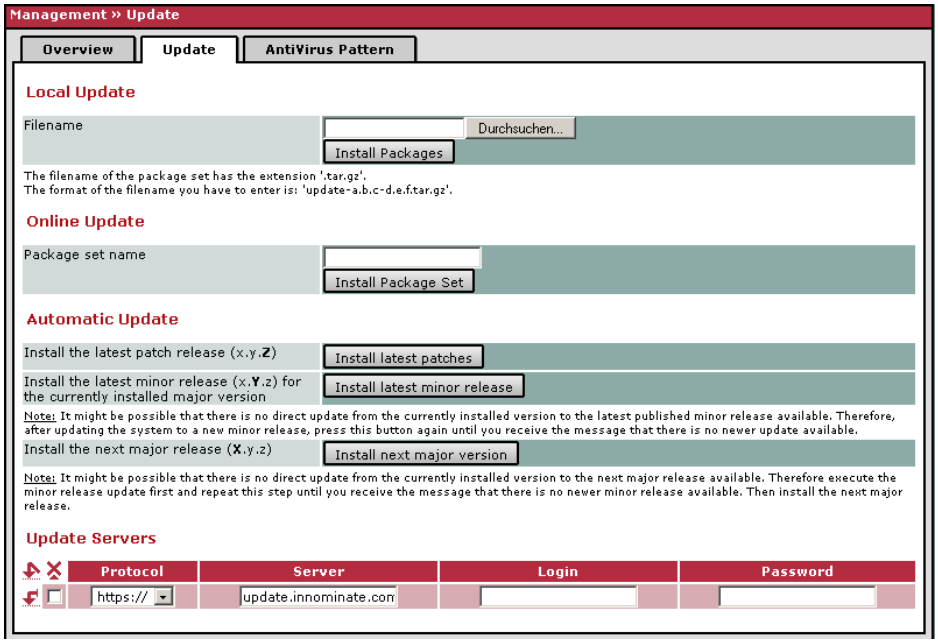
Anti-Virus Update Status

Shows if the anti-virus update is activated or currently downloading

Package Versions

Lists the individual software modules of the mGuard. Can be used for support purposes, as applicable.

Update


Management » Update
Overview
Update
AntiVirus Pattern
Local Update
Filename
Durchsuchen...
Install Packages
The filename of the package set has the extension '.tar.gz'.
The format of the filename you have to enter is: 'update-a.b.c-d.e.f.tar.gz'.
Online Update
Package set name
Install Package Set
Automatic Update
Install the latest patch release (x.y.Z)
Install latest patches
Install the latest minor release (x.Y.z) for the currently installed major version
Install latest minor release
Note: It might be possible that there is no direct update from the currently installed version to the latest published minor release available. Therefore, after updating the system to a new minor release, press this button again until you receive the message that there is no newer update available.
Install the next major release (X.y.z)
Install next major version
Note: It might be possible that there is no direct update from the currently installed version to the next major release available. Therefore execute the minor release update first and repeat this step until you receive the message that there is no newer minor release available. Then install the next major release.
Update Servers
Protocol
Server
Login
Password
https://
update.innominate.com

There are two possibilities for conducting a software update:

– You have the update package set file on your computer (the file name ends with “.tar.gz”) and you conduct a local update.

OR

– You can download the package set file via the Internet from the update server and then install the packages.

⌦ Depending on the size of the update, this may take several minutes.

⌦ If a reboot is necessary after a system update, a message to this effect will be displayed.

⌦ **Do not interrupt the power supply during the update procedure! Otherwise the device could be damaged and may be left inoperable, and will require your device to be sent to the manufacturer.**

Local Update

Filename

To install the packages proceed as follows:

1. Click on **Browse...** , select and open the file so that its path or filename is shown in the field Filename.
   The format of the filename is: update-a.b.c-d.e.f.tar.gz.
2. Click on **Install Packages** to transfer them to the device.

Online Update

To perform an online update proceed as follows:

1. Be sure that at least one valid entry exists under **Update Server**. You should

have received the necessary details from your licensor.

2. Enter the update's name in the entry field, e.g. "update-4.0.x-4.1.0.default".
3. Click on **Install Package Set** to transfer them to the device.
   Depending on the size of the update, this may take several minutes.

If a reboot is necessary after a system update, a message to this effect will be displayed.

Automatic Update

This is a variation of the online update in which the mGuard independently determines the required package set name.

Install the latest patch release (x.y.Z)

Patch releases regulate errors in previous versions and have a version number which only changes in the third digit position:
e.g. 4.0.1 is a patch release for version 4.0.0.

Install the latest minor release for the currently installed major version (x.Y.z)

Install the next major release (X.y.z)

Minor and major releases supplement the mGuard with new features or contain modifications of the mGuard's behavior. Their version number change in the first and second digit position.
E.g. 4.1.0. is a major/minor release for the versions 3.1.0/4.0.1.

Update Servers

Here you can specify the servers from which the mGuard shall retrieve its updates.

⌦ The list of the servers is processed top-down until an available server is found.

Protocol

The update files can be downloaded using either HTTP or HTTPS.

Server

In this field, enter the FQDN or IP address of the server from which the update files shall be downloaded, eg. "123.456.789.21" or "update.example.com".

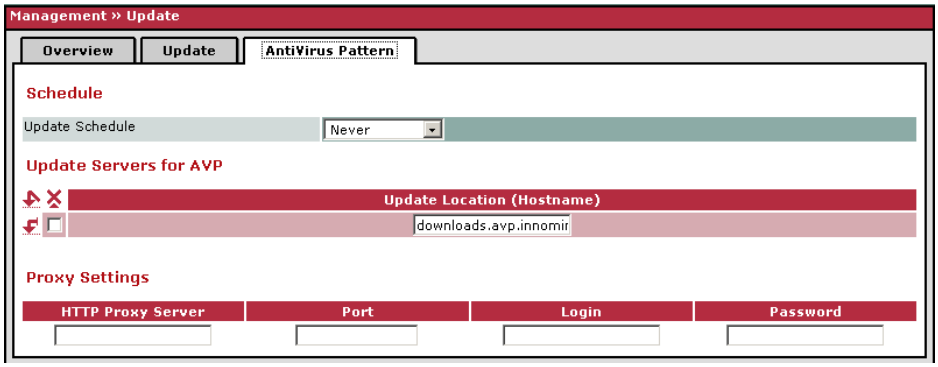
Login

In this field, enter the user name to be used for connecting to the server.

Password

In this field, enter the password to be used when logging in.

AntiVirus Pattern



The virus signature files can be updated from a selected update server at intervals defined by the user. The update is performed without interrupting the operation of the anti-virus filter. The mGuard is delivered without any virus signatures installed. Therefore, after the anti-virus protection has been activated with the corresponding license, you should also set the update schedule. The course of the

updates can be examined in the Anti-Virus Update log.

Schedule

Update Schedule

This parameter is used to set how often the signature files are updated. The size of the signature file is about several MByte. The system will only download the changed files from the update server.

Update Servers for AVP

You can select the server from which the updated signature files should be downloaded. A default server has already been entered. If necessary, you can enter your own servers.

☒ The list of servers will be processed from the top down until an available server is found.

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

Proxy Settings

When the mGuard is located behind a firewall which restricts HTTP or FTP access to use a proxy server, the following rows can be used to specify the required proxy settings.

☞ For the proxy server to be used the fields **HTTP/FTP Proxy Server** *and* **Port** must be set.

☞ To authenticate with the proxy server the fields **Login** *and* **Password** must be set.

HTTP/FTP Proxy Server

The proxy servers IP or hostname.

Port

The port corresponding to the IP or hostname of the proxy server.

Login

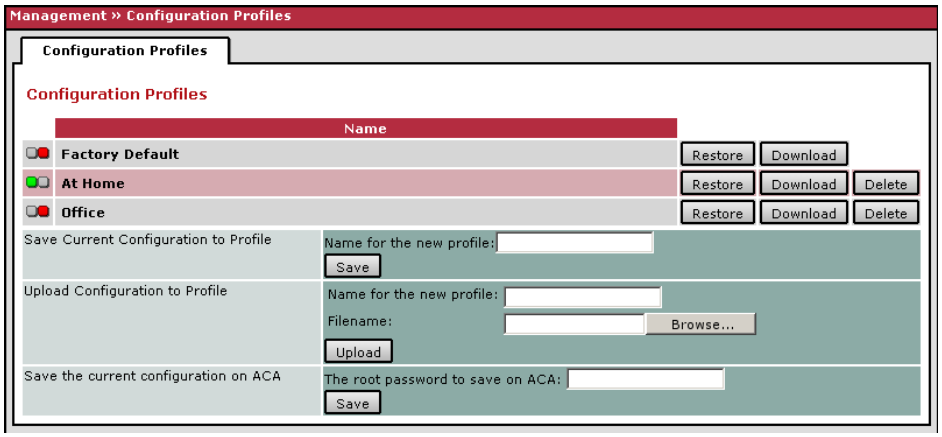
The login in case the proxy server requires authentication.

Password

The password corresponding to the login.

6.2.5 Management → Configuration Profiles

Configuration Profiles



Here you can save the configuration settings as a configuration profile under any name on the mGuard. It is possible to create and save multiple configuration

profiles. You may then activate the configuration profile appropriate at the time, if you use the mGuard in different operating environments.
Furthermore, you can also save configuration profiles as files on the configuration system. Naturally, these configuration files can then be read back onto the mGuard and activated.
Furthermore, you can restore the mGuard to the factory settings at any time.

⌦ Passwords and user names are not saved in the configuration profiles.

Configuration profiles

The top of the Configuration profile page has a list of configuration profiles that are stored on the mGuard, for example, the Factory Default configuration profile. If any configuration profiles have been saved by the user (see below), they will be listed here.

Active configuration profile: The configuration profile that is currently in effect is shown with the green light next to the entry.
You can do the following with configuration profiles that are stored on the mGuard:

- Activate them
- Save them to a file on the connected configuration computer
- Delete them
- Display them.

Displaying the configuration profile:

Click the name of the configuration profile in the list.

Applying the factory setting or a configuration profile setting that has been stored by the user

Click the **Restore** button located to the right of the name of the relevant configuration profile.
Result:
The corresponding configuration profile is activated.

⌦ If the restoration involves a switch between the stealth mode and another network mode, then mGuard is restarted.

Saving the configuration profile as a file to the configuration computer

1. Click the Download button to the right of the name of the respective configuration profile.
2. Specify the file name and folder in which the configuration profile is to be saved as a file in the displayed dialogue box. (You can give the file any name.)

Deleting a configuration profile:

Click the **Delete** button to the right of the name of the respective configuration profile.

⌦ The **Factory Default** profile can't be deleted.

Saving the current configuration as a configuration profile on the mGuard

1. Enter the desired profile name in the field behind "Save current configuration as profile".
2. Click the Save button.

Result:
The configuration profile is saved on the mGuard, and the name of the profile is displayed in the list of profiles saved on the mGuard.

Uploading a configuration profile that has been saved to the configuration computer

Prerequisite: You have saved a configuration profile on the configuration computer as a file according to the procedure described above.

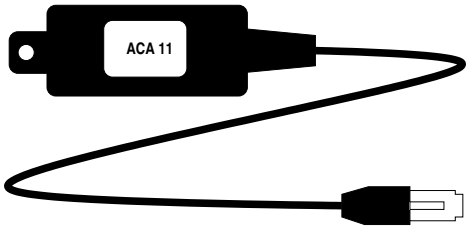
1. Enter the desired *new profile name* in the field behind "Upload a configuration as profile".
2. Click the **Browse**… button and select the respective file in the displayed dialogue box and open it.
3. Click the **Upload** button

Result:

The configuration profile is loaded into mGuard, and the name assigned in Step 1 will be displayed in the list of the profiles stored on the mGuard.

Profiles on the ACA (EAGLE mGuard only)

Configuration profiles can be stored also on an external *autoconfiguration adapter* (ACA) which is connected to the mGuard's V.24 (ACA11) or USB (ACA21) port.



Store a profile on the ACA

- When the password of the mGuard, on which you will later import the profile, has a root password unequal "root" you must enter that password under **The root pasword to save on ACA**.
- Press the button **Save Current Configuration to ACA** to write the current configuration to the ACA.

The LED STATUS and also the V.24 LED in case of ACA11 will blink until the store procedure is finished.

Restore profile from the ACA

Plug the ACA in mGuard's V.24/USB socket. Start mGuard while the ACA is plugged in. The mGuard's password has to be either 'root' or correspond to the password designated when saving the profile.

The STATUS LED and also the V.24 LED in case of an ACA11 will flash until the loading process has ended.

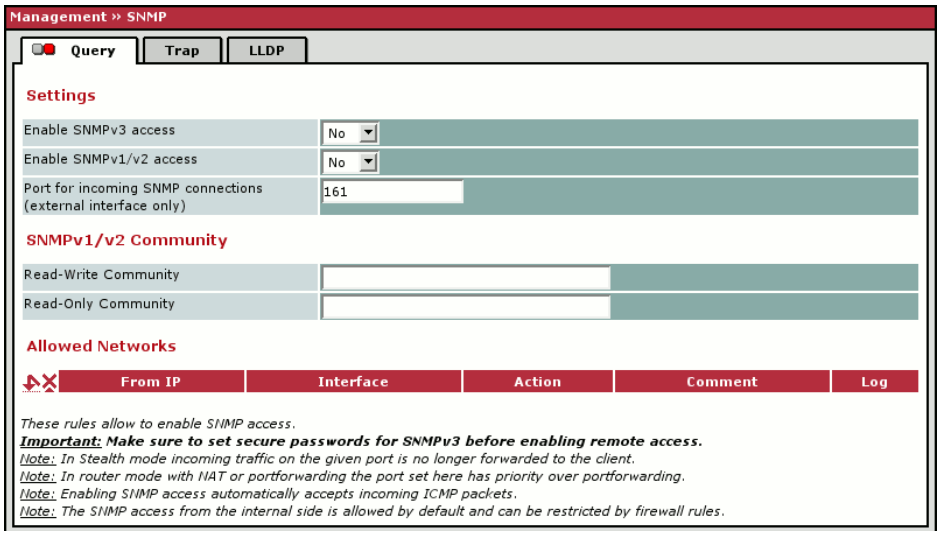
Result:

The configuration profile loaded from the ACA is loaded into the mGuard and launched. It does not appear in the list of configuration profiles stored on the mGuard

⌦ The configuration on the ACA also includes the root, admin and user passwords, which will also be used when restoring a configuration from the ACA.

6.2.6 Management → SNMP

Query


Management » SNMP
Query
Trap
LLDP
Settings
Enable SNMPv3 access
No
Enable SNMPv1/v2 access
No
Port for incoming SNMP connections (external interface only)
161
SNMPv1/v2 Community
Read-Write Community
Read-Only Community
Allowed Networks
From IP
Interface
Action
Comment
Log
These rules allow to enable SNMP access.
Important: Make sure to set secure passwords for SNMPv3 before enabling remote access.
Note: In Stealth mode incoming traffic on the given port is no longer forwarded to the client.
Note: In router mode with NAT or portforwarding the port set here has priority over portforwarding.
Note: Enabling SNMP access automatically accepts incoming ICMP packets.
Note: The SNMP access from the internal side is allowed by default and can be restricted by firewall rules.

SNMP (Simple Network Management Protocol) is mainly used in more complex networks to monitor the status and operation of devices.

SNMP is available in several releases: SNMPv1/SNMPv2 and SNMPv3.

The older versions SNMPv1/SNMPv2 do not use encryption and are not considered to be secure. We therefore recommend that you do not use SNMPv1/SNMPv2.

As far as security is concerned, SNMPv3 is considerably better, but not all management consoles support it.

⌦ It can take more than one second to process SNMP- “get” or “walk” requests. However the factory settings for the timeout of many Network Management Applications is set to one second. In case you experience timeout problems, please set the time-out of your Management Application to values between 3 and 5 seconds.

Settings

Enable SNMPv3 access: Yes / No

If you wish to allow monitoring of the mGuard via SNMPv3, set this switch to **Yes**.

The access via SNMPv3 requires an authentication with a login and a password. The factory settings for these entries are:

Login: admin

Password: SnmpAdmin

MD5 is supported for the authentication; DES is supported for encryption.

The login parameters for SNMPv3 can be changed only by using SNMPv3.

Enable SNMPv1/v2 access: Yes / No

If you wish to allow monitoring of the mGuard via SNMPv1/v2, set this switch to **Yes**.

Port for incoming SNMP connections (external interface only)

Standard: 161

SNMPv1/v2 Community

Read-Write Community

Read-Only Community

Enter the required login data in these two fields.

Allowed Networks

Lists the firewall rules that have been set. These apply for the incoming data packets of an SNMP access.

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

From IP

Enter the address(es) of the system(s) that is/are allowed access for the purpose of SNMP monitoring in this field.

You have the following options for the entries:

- An IP address.
- To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.
- **0.0.0.0/0** means all addresses.

Interface

External OR **Internal**

Specifies whether the rule applies to the external interface (= WAN port) or the internal interface (= LAN port).

The default behaviour when no rules are specified is to drop all connections on the external interface and to accept all connections on the internal interface.

Action

Possible settings:

- Accept
- Reject
- Drop

Accept means that the data packets should be passed through.

Reject means that the data packets should be rejected so that the sender is informed that the data packets have been rejected. (In *Stealth* mode, *Reject* has the same effect as *Drop*.)

Drop means that the data packets should not be passed through. The data packets will be discarded so that the sender will not be informed as to what happened to them.

☞ In Stealth mode, *Reject* is not supported.

Comment

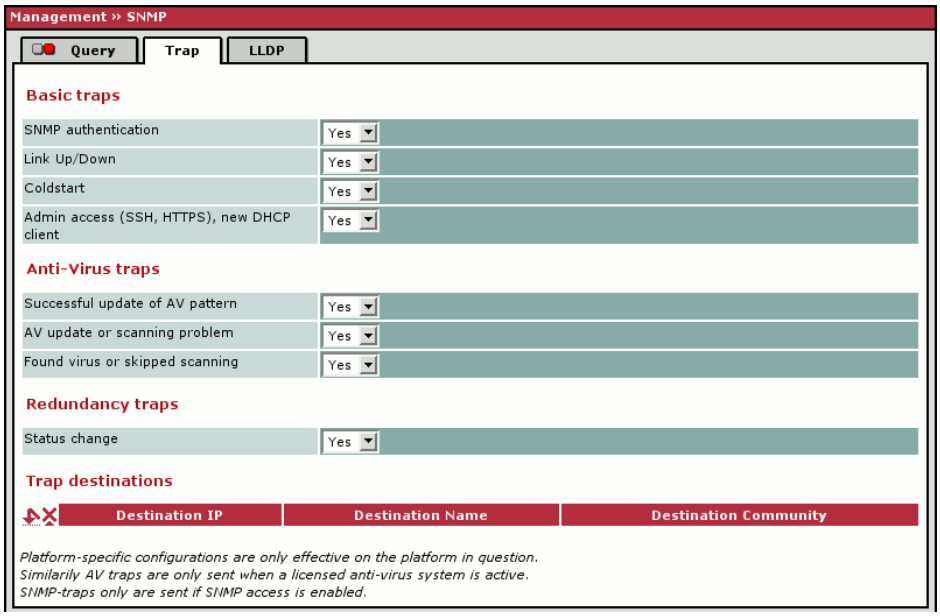
An informational comment for this rule.

Log

You can specify - for each individual firewall rule - whether the use of the rule

- should be logged by setting - *Log* to **Yes**
- or should not be logged by setting - *Log* to **No** (factory setting).

Trap



On certain events the mGuard can send SNMP traps. These traps are compatible with SNMPv1. For each setting the traps being sent are explained below.

Basic traps

- **SNMP authentication**: activate traps: **Yes/No**
  enterprise-oid : mGuardInfo
  generic-trap : authenticationFailure
  specific-trap : 0
  Description : This trap is send in case a station tries to access the mGuard's SNMP agent without proper authorisation.
- **Link Up/Down**: activate traps: **Yes/No**
  enterprise-oid : mGuardInfo
  generic-trap : linkUp, linkDown
  specific-trap : 0
  Description : This trap is send in case the connection to an ethernet port is interrupted (linkDown) or reestablished (linkUp).
- **Coldstart**: activate traps: **Yes/No**
  enterprise-oid : mGuardInfo
  generic-trap : coldStart
  specific-trap : 0
  Description : This trap is send after a cold start or a warm start.
- **Admin access (SSH, HTTPS), new DHCP Client**: activate traps: **Yes/No**
  enterprise-oid : mGuardb
  generic-trap : enterpriseSpecific
  specific-trap : mGuardHTTPSLoginTrap (1)
  additional : mGuardHTTPSLastAccessIP
  Description : This trap is sent when someone is trying to open a HTTPS session using the wrong password.
  mGuardHTTPSLastAccessIP contains the IP address of the last unsuccessfull login request.

  enterprise-oid : mGuard
  generic-trap : enterpriseSpecific
  specific-trap : mGuardShellLoginTrap (2)
  additional : mGuardShellLastAccessIP

Description : This trap is sent when someone opens the shell through SSH or serial console. mGuardShellAccessLastIP contains the IP address of the login request. The value of mGuardShellAccessLastIP is 0.0.0.0, if the request was sent via serial console.

enterprise-oid : mGuard
generic-trap : enterpriseSpecific
specific-trap : mGuardDHCPNewClientTrap (3)
additional : mGuardDHCPLastAccessMAC
Description : This trap is sent when a DHCP request was received from an unknown client

Hardware related traps (only EAGLE mGuard)

- **Chassis (power signal relay)**: activate traps: **Yes/No**

enterprise-oid : mGuardTrapIndustrial
genericTrap : enterpriseSpecific
specific-trap : mGuardTrapIndustrialPowerStatus (2)
additional : mGuardTrapIndustrialPowerStatus
Description : This trap is sent when power supply failure was detected.

enterprise-oid : mGuardTrapIndustrial
genericTrap : enterpriseSpecific
specific-trap : mGuardTrapSignalRelais (3)
additional : mGuardTResSignalRelaisState, mGuardTResSignalRelaisReason, mGuardTResSignalRelaisReasonIdx
Description : Current state of the signal relais changed (0=off, 1=on).

- **Agent (ACA, temperature):** activate traps: **Yes/No**

enterprise-oid : mGuardTrapIndustrial
genericTrap : enterpriseSpecific
specific-trap : mGuardTrapIndustrialTemperature (1)
additional : mGuardSystemTemperature, mGuardTrapIndustrialTempHiLimit, mGuardTrapIndustrialLowLimit
Description : Trap reporting temperature exceeding the given limits.

enterprise-oid : mGuardTrapIndustrial
genericTrap : enterpriseSpecific
specific-trap : mGuardTrapAutoConfigAdapterState (4)
additional : mGuardTrapAutoConfigAdapterChange
Description : This trap is sent when the ACA was accessed.

Blade Controller Traps (only blade)

- **Blade status change (replug, failure) and power supply**: activate traps: **Yes/No**

enterprise-oid : mGuardTrapBladeCTRL
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapBladeCtrlPowerStatus (2)
additional : mGuardTrapBladeRackID, mGuardTrapBladeSlotNr, mGuardTrapBladeCtrlPowerStatus
Description : The BladePack's power supplies status has changed.

enterprise-oid : mGuardTrapBladeCTRL
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapBladeCtrlRunStatus (3)
additional : mGuardTrapBladeRackID,
mGuardTrapBladeSlotNr,
mGuardTrapBladeCtrlRunStatus
Description : The blade's run status has changed.

- **Blade reconfiguration (backup/restore):** activate traps: **Yes/No**

enterprise-oid : mGuardBladeCtrlCfg
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapBladeCtrlCfgBackup (1)
additional : mGuardTrapBladeRackID,
mGuardTrapBladeSlotNr,
mGuardTrapBladeCtrlCfgBackup
Description : A configuration backup to the Blade Controler is triggered.

enterprise-oid : mGuardBladeCtrlCfg
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapBladeCtrlCfgRestored (2)
additional : mGuardTrapBladeRackID,
mGuardTrapBladeSlotNr,
mGuardTrapBladeCtrlCfgRestored
Description : Configuration restore from Blade CTRL is triggered.

Antivirus SNMP-Traps

- **Successful update for AV pattern**: activate traps: **Yes/No**

enterprise-oid : mGuardTrapAV
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapAvUpdateDone (1)
additional : mGuardTResAvUpdateDone
Description : AV Update was performed successfully.

- **AV update or scanning problems**: activate traps: **Yes/No**

enterprise-oid : mGuardTrapAV
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapAvUpdateError (2)
additional : mGuardTResAvUpdateError
Description : Error when performing AV Update.

enterprise-oid : mGuardTrapAV
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapAvFailed (5)
additional : mGuardTResAvFailed
Description : General AV failure.

- **Found virus or skipped scanning**: activate traps: **Yes/No**

enterprise-oid : mGuardTrapAV
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapAvVirusDetected (3)
additional : mGuardTResAvVirusDetected
Description : AV found a virus.

enterprise-oid : mGuardTrapAV
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapAvFileNotScanned (4)
additional : mGuardTResAvFileNotScanned
Description : The file was not scanned for viruses.

Redundancy Traps

- **Status change**: activate traps: **Yes/No**

enterprise-oid : mGuardTrapRouterRedundancy
genericTrap : enterpriseSpecific
specific-trap : mGuardTrapRouterRedundancyStatusChange (1)
additional : mGuardTResRedundancyState,
mGuardTResRedundancyReason
Description : Current HA cluster state changed.

enterprise-oid : mGuardTrapRouterRedundancy
genericTrap : enterpriseSpecific
specific-trap : mGuardTrapRouterRedundancyBackupDown (2)
additional : mGuardTResRedundancyBackupDown
Description : Backup device is not reachable by Master device (This trap is only sent, when ICMP checks are activated).

User firewall traps: Yes / No

enterprise-oid : mGuardTrapUserFirewall
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapUserFirewallLogin (1)
additional : mGuardTResUserFirewallUsername,
mGuardTResUserFirewallSrcIP,
mGuardTResUserFirewallAuthenticationMethod
Description : Remote User logged in.

enterprise-oid : mGuardTrapUserFirewall
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapUserFirewallLogout (2)
additional : mGuardTResUserFirewallUsername,
mGuardTResUserFirewallSrcIP,
mGuardTResUserFirewallLogoutReason
Description : Remote User logged out.

enterprise-oid : mGuardTrapUserFirewall
generic-trap : enterpriseSpecific
specific-trap : mGuardTrapUserFirewallAuthenticationError (3)
additional : mGuardTResUserFirewallUsername,
mGuardTResUserFirewallSrcIP,
mGuardTResUserFirewallAuthenticationMethod
Description : Authentication error occured.

SNMP Trap Destinations

Traps can be send to one or more targets.

Destination IP

IP, to which the trap shall be sent.

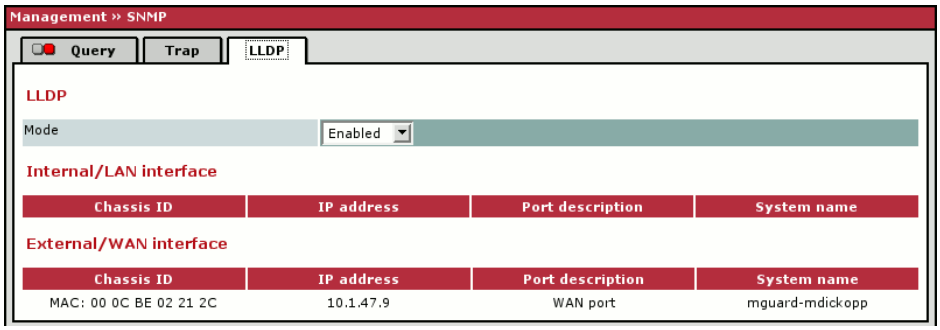
Destination Name

An optional descriptive name for the destination, which has no influence on the generated traps.

Destination Community

Name of the traps SNMP community.

LLDP



LLDP (Link Layer Discovery Protocol, IEEE 802.1AB) supports the automatic detection of the (ethernet) network topology.

LLDP capable devices periodically send ethernet multicasts (layer 2) with network information about themselves which will be collected by other LLDP capable devices and made available via SNMP.

Mode

Enabling and disabling of the LLDP service.

Internal/LAN interface and External/WAN interface

Chassis ID

An entity which identifies a remote device uniquely; typically one of its MAC addresses.

IP address

The IP address to manage the remote device via SNMP.

Port description

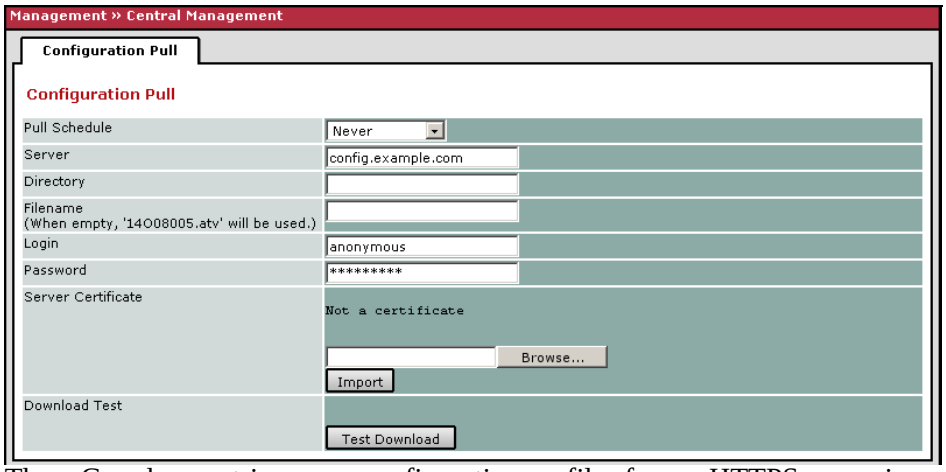
A textual description of the remote device's interface.

System name

Hostname of the remote device.

6.2.7 Management → Central Management

Configuration Pull



The mGuard can retrieve new configuration profiles from a HTTPS server in configurable time intervals. When a new configuration differs from the current

configuration, it will be activated automatically.

Configuration Pull

Pull Schedule
Interval, at which new configurations will be searched on the server

Server
IP or Hostname of the server, which provides the configuration profiles.

Directory
The directory on the server in which the configuration profile is located.

Filename
The name of the file in the directory defined above. In case no filename is defined here, the name of the configuration file the mGuard's serial number with the suffix ".atv" is used.

Login
The login on the HTTPS server.

Password
The Password on the HTTPS server.

Server Certificate
The certificate, which authenticates the HTTPS server from which the configuration is fetched. It is used to prevent unauthorized configurations from being installed on the mGuard.

☞ In case the configuration profiles do contain the machine certificate or PSKs for VPN connections the password should consist of at least 30 random upper and lower case letters and numbers, in order to prevent unallowed access to the keys.
The HTTPS server should further only grant access to a single configuration profile per login and password. Otherwise users of other or even compromised mGuards may gain access to other configurations.

☞ The IP address or the hostname specified under *Server* must be the same as the certificate's Common Name (CN) entry.

☞ Self signed certificates should not use the "key-usage" extension.

☞ In case the server certificate is self signed, that server certificate must be imported here. In case the certificate was signed by a certification authority (CA), the CA's certificate must be imported here.

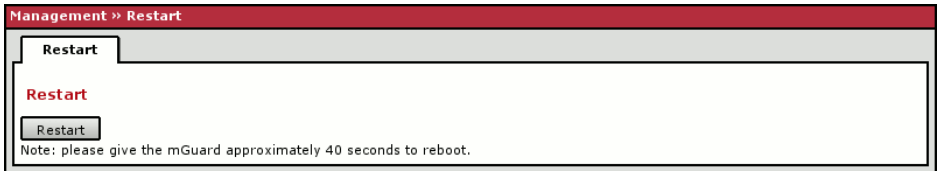
To install the certificate perform the following steps:

1. Click on **Browse...** so select the certificate file.
2. Click on **Import**.

Download Test
By clicking on **Test Download** you can test – without actually saving the modified parameters or activating the profile – if the parameters are correct. The result of the test will be displayed in the right column.

⌧ You should make sure that the profile on the server does not contain unwanted variables beginning with "GAI_PULL_" which overwrite the pull configuration on the mGuard.

6.2.8 Management → Restart



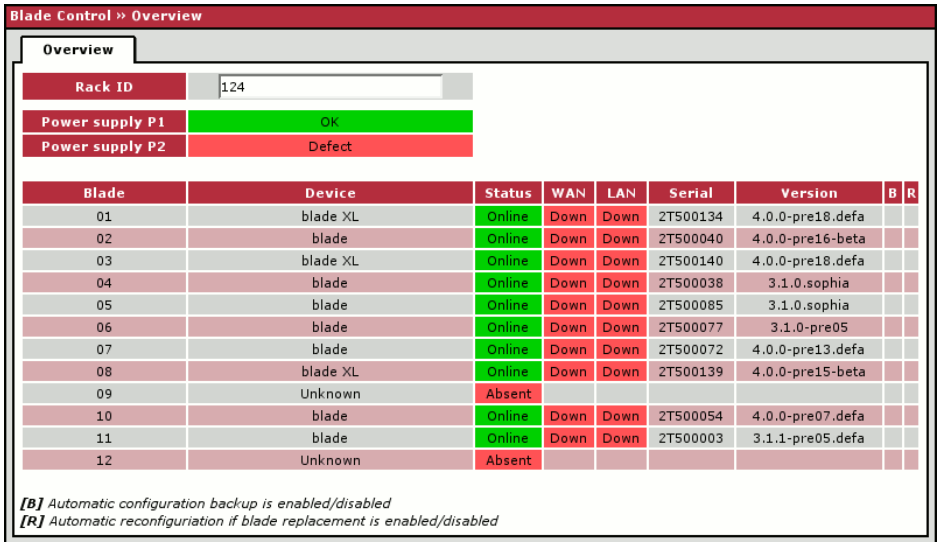
A new start (= reboot) is necessary in the event that a fault occurs. It may also be necessary after a software update.

(You can also reboot the device by switching it off and back on again.)

6.3 Menu Entry Blade Control (control unit only)

This menu is only available on the control unit.

6.3.1 Blade control → Overview



Blade	Device	Status	WAN	LAN	Serial	Version	B	R
01	blade XL	Online	Down	Down	2T500134	4.0.0-pre18.defa		
02	blade	Online	Down	Down	2T500040	4.0.0-pre16-beta		
03	blade XL	Online	Down	Down	2T500140	4.0.0-pre18.defa		
04	blade	Online	Down	Down	2T500038	3.1.0.sophia		
05	blade	Online	Down	Down	2T500085	3.1.0.sophia		
06	blade	Online	Down	Down	2T500077	3.1.0-pre05		
07	blade	Online	Down	Down	2T500072	4.0.0-pre13.defa		
08	blade XL	Online	Down	Down	2T500139	4.0.0-pre15-beta		
09	Unknown	Absent						
10	blade	Online	Down	Down	2T500054	4.0.0-pre07.defa		
11	blade	Online	Down	Down	2T500003	3.1.1-pre05.defa		
12	Unknown	Absent						

[B] *Automatic configuration backup is enabled/disabled*
[R] *Automatic reconfiguriation if blade replacement is enabled/disabled*

Rack ID

The ID of the rack into which the mGuard is mounted. This values can be set on the control unit for all blades inside the rack.

Power Supply P1/P2

State of the power supplies P1 and P2.

- OK
- Absent
- Defect
- Fatal Error

Blade

Number of the slot in which the mGuard is installed.

Device

Device type, e.g. “blade” or “blade XL”.

State

Online The device in the slot is ready.

Present The device is present but not ready yet, e.g. it is still booting.

Absent No device was found in the slot.

WAN
Status of the Ethernet WAN port.

LAN
Status of the Ethernet LAN port.

Serial
The mGuard’s serial number.

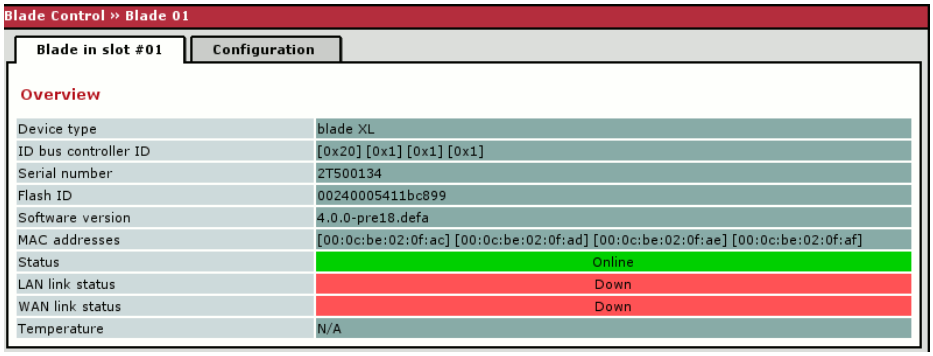
Version
Software version of the mGuard.

B
Automatic configuration **backup** on the controller is activated/deactivated for this slot.

R
Automatic configuration **restore** from the controller is activated/deactivated for this slot.

6.3.2 Blade control → Blade 01 to 12

Blade in slot #__



Overview

Device type
Device type, e.g. “blade” or “blade XL”.

ID bus Controller ID
ID of this slot on the bladeBases control bus.

Serial
The mGuard’s serial number.

Flash ID
Serial number of the mGuard’s flash chip.

Software version
Software version of the mGuard.

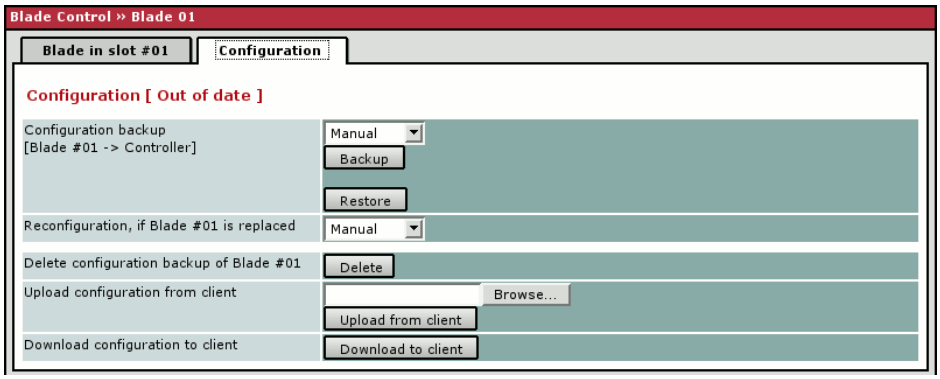
MAC addresses
All MAC addresses used by the mGuard.

Status
Status of the mGuard

WAN link status
Status of the Ethernet WAN port.

LAN link status
Status of the Ethernet LAN port.

Configuration



Configuration

Configuration backup [Blade #__ -> Controller]

Automatic Shortly after a configuration change on the mGuard, the new configuration will be stored automatically on the controller.

Manual With the **Backup** button the configuration can be stored on the controller and with the **Restore** button it can be restored from the controller onto the mGuard.

Reconfiguration, if Blade #__ is replaced

After replacing an mGuard in this slot, the configuration stored on the controller will be automatically applied to the new mGuard.

Delete configuration backup of Blade #__

Deletes the configuration stored on the controller for this slot.

Upload configuration from client

Upload a configuration profile for this slot to the controller.

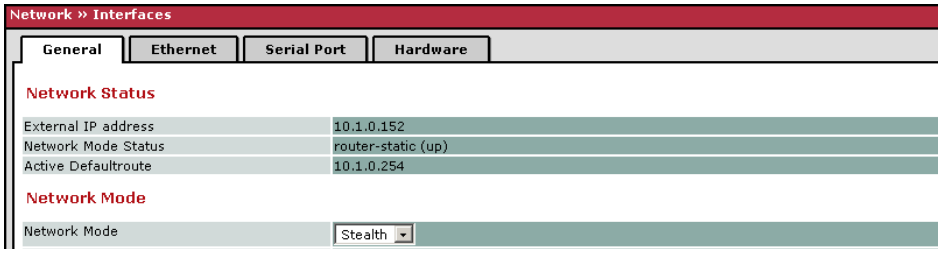
Download configuration to client

Download the configuration profile stored on the controller for this slot.

6.4 Menu Network

6.4.1 Network → Interfaces

General



Network Status

External IP address – WAN port address

Display only: The addresses through which mGuard can be accessed by devices from the external network. They form the interface to other parts of the LAN or to the Internet. If the transition to the Internet takes place here, the IP addresses are usually designated by the Internet Service Provider (ISP). If mGuard is assigned an IP address dynamically, you can look up the currently valid IP address here.

In *stealth mode*, mGuard adopts the address of the connected local computer as its external IP.

Network mode status

Displays the status of the selected network mode.

Active default route

The IP address that mGuard uses to try to reach networks unknown to it is displayed here. If mGuard is in stealth mode or if the IP address that is specified as the standard gateway in the connected computer's configuration is not correct, (none) is shown here.

Network mode

The mGuard has to be set to the network mode that corresponds to its local computer or network connection, respectively. See "Typical application scenarios" on page 11.

☞ Depending to which network mode the mGuard is set, the page will change and only display the configuration parameters which are required for that mode.

- **Stealth** *(factory setting except mGuard delta and blade controller)*
  Stealth mode is only used when a single computer is locally connected to the device.
  In this mode, the device can be simply integrated (inserted) into an existing network connection of the respective computer. In this case, simply insert the mGuard into the network line - see the illustration in the section "Connect the mGuard smart" on page 24.
  The mGuard will analyze the network traffic passing through it and configure its network connection accordingly. It will then operate transparently, i.e. without requiring that the client be reconfigured.
  As in the other cases, the mGuard supports the Firewall and VPN security functions in this mode of operation as well.
  DHCP data (received from outside) will be passed through to the connected client.

☞ In case a firewall is installed on the client, it must be configured to allow ICMP Echo Requests (ping). Otherwise the mGuard won't be able to use services like VPN, DNS, NTP, etc..

☞ In *Stealth* mode the mGuard uses 1.1.1.1 as its internal IP address which is accessible when the client's configured default gateway is also accessible.

- **Router** *(factory setting mGuard delta and blade controller)*
  If the mGuard is not in *Stealth* mode, it serves as a gateway between different networks and has both an external and an internal IP address.
  External Interface:
  The external interface (WAN) of the mGuard is connected to the Internet or other parts of the LAN.
    - mGuard smart: the ethernet jack

  Internal Interface:
  A network or a single system is connected to its internal interface (LAN):
    - mGuard smart: the Ethernet plug
    - mGuard PCI: The internal interface is in Driver Mode the network interface of the Operating System or in Power-over-PCI mode the LAN Ethernet jack of the mGuard PCI.

  As in the other cases, the mGuard supports the Firewall and VPN security functions in this mode of operation as well.

  ☞ If the mGuard is operated in *Router* mode, you must set it as the standard gateway in the locally connected client computers. In other words, the address entered for the standard gateway must be the internal IP address of the mGuard. See "Initializing the default gateway" on page 35.

  ☞ If the mGuard is operated in *Router* mode and is used to establish the connection to the Internet, you should activate NAT to allow access to the Internet from the local network - see "Network Address Translation/ IP Masquerading" on page 93. If NAT is not activated, the device may only allow VPN connections.

- **PPPoE**
  PPPoE mode corresponds to the Router mode with DHCP – with one difference: The PPPoE protocol, which is used by many DSL modems (for DSL Internet access in germany), will be used for connecting to the external network (Internet or WAN). The external IP address, under which the mGuard can be reached from a remote site, is assigned by the Internet Service Provider.

  ☞ If the mGuard is operated in *PPPoE* mode, you must set it as the standard gateway in the locally connected client computers. In other words, the address entered for the standard gateway must be the internal IP address of the mGuard. See "Initializing the default gateway" on page 35.

  ☞ If the mGuard is in *PPPoE* mode, NAT must be activated to enable access to the Internet - see "Network Address Translation/IP Masquerading" on page 93. If NAT is not activated, the device will only allow VPN connections.

- **PPTP**
  This mode is similar to *PPPoE* mode. In Austria, for example, PPTP is used instead of the PPPoE protocol for DSL connections.
  (PPTP is a protocol originally designed by Microsoft for VPN connections.)

  ☞ If the mGuard is operated in *PPTP* mode, you must set it as the standard gateway in the locally connected client computers. In other words, the address entered for the standard gateway must be the internal IP address of the mGuard. See “Initializing the default gateway” on page 35.

  ☞ If the mGuard is operated in *PPTP* mode, you should activate NAT to allow access to the Internet from the local network - see “Network Address Translation/IP Masquerading” on page 93. If NAT is not activated, the device will only allow VPN connections.

⌧ When the Network Mode has been changed to or away from *Stealth* mode, the device will reboot automatically.

⌧ If you change the address of the mGuard (e.g. by changing the Network Mode from *Stealth* to *Router*), the device will only be accessible at the new address. When the change is done from the local interface, you will get a message telling you the new address before the change becomes active. When the change is done from the external interface you will not receive feedback from the mGuard.

⌧ If you set the Network Mode to *Router*, *PPPoE* or *PPTP* and then change the internal IP address and/or the local netmask, make very certain that you enter the correct values. Otherwise, the mGuard may no longer be accessible.

External IP Address

Address under which the mGuard is accessible for external network devices. If the mGuard has been allocated an IP address dynamically, you will see here the IP address that is currently valid.

In *Stealth* mode, the mGuard assumes the address of the computer which is connected locally as its external IP.

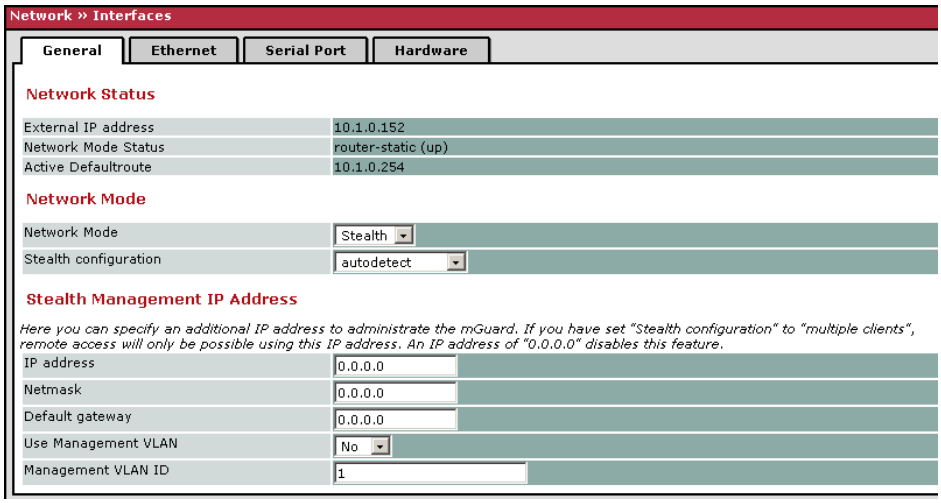
Network Mode Status

Displays the status of the selected network mode.

Active Default Route

Here the IP address is displayed via which the mGuard tries to reach networks that are unknown to it. The display will read “(none)” if the mGuard is running in *Stealth* mode, or if the IP address which has been defined in the configuration for the connected computer as the default gateway is not correct..

Network Mode → Stealth*(factory setting except mGuard delta and blade controller)*



Network Mode

Stealth configuration: autodetec / static / multiple clients

autodetect

(Standard) The mGuard will analyse the network traffic, configure its network interface accordingly and will then function transparently.
For special cases, you can also preset these values, e.g. in the following case: The connected computer only accepts incoming connections so that it is not possible for the mGuard to configure automatically.

static

If the mGuard cannot analyse the network traffic passing through, e.g. because the locally connected computer only receives data, the *Stealth configuration* must be set to **Static**.

multiple clients

Like **autodetect**, but it is possible to use multiple devices and IPs on the mGuard's internal interface (LAN).
For technical reasons VPN can't be used with this mode.

Stealth Management IP Address (Network Mode = Stealth)

An additional IP address can be specified here to administrate the mGuard. If

- *Stealth configuration* is set to the option **multiple clients** or
- the client doesn't answer ARP requests or
- there is no client at all,

then the remote administration via HTTPS, SNMP and SSH is only possible using the management IP address.

IP address

The additional IP address to contact the mGuard.
The IP address "0.0.0.0" disables the *Management IP Address*.

Netmask

The netmask for the IP address above.

Default Gateway

The default gateway of the network the mGuard is located in.

Use Management VLAN

If this IP address is to be inside a VLAN, this option must be set to **Yes**.
This option is only effective when the option **Stealth configuration** is set to **multiple clients**.

Management VLAN ID

A VLAN ID between 1 and 4095.

☞ An explanation of the term “VLAN” can be found under “VLAN” on page 148.

Static Stealth Configuration (Stealth Configuration = static)

Client’s IP address

The IP address of the client.

Client’s MAC address

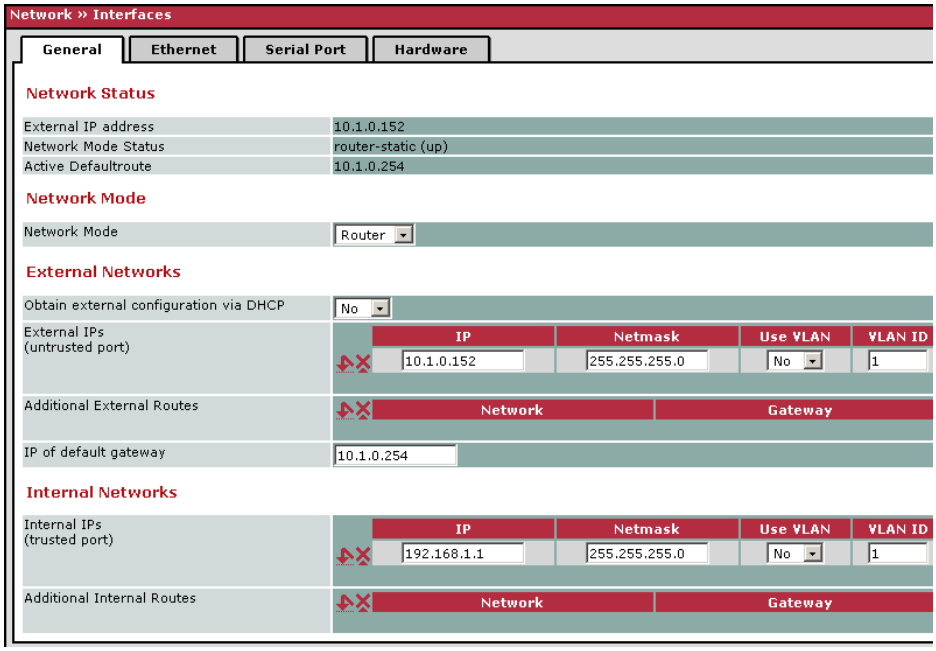
This is the physical address of the local computer’s network adapter to which the mGuard is connected.

⌧ **The MAC address can be determined in the following manner:**

On the DOS level (**Start, Programs, Accessories, Command Prompt**), enter the following command:

```
ipconfig  /all
```

Network Mode → Router *(factory setting mGuard delta and blade controller)*



External Networks (Network Mode = Router)

These are the addresses under which the mGuard can be accessed by devices in the external networks (connected to the mGuard's Ethernet connector). If this unit is serving as a gateway to the Internet, the IP addresses will be assigned by the Internet Service Provider (ISP).

Obtain external configuration via DHCP: Yes / No

☞ If the mGuard obtains the configuration data via DHCP (Dynamic Host Configuration Protocol) from a DHCP server, enter **Yes**. In that case, all other entries made on this page will be ignored.

☞ If the mGuard does not obtain the configuration data via DHCP (Dynamic Host Configuration Protocol) from a DHCP server, enter **No** and make the following additional entries:

External IPs (untrusted port)

IP/Netmask

IP and netmask for the external interface (WAN).

Use VLAN

If this IP address is to be inside a VLAN, this option must be set to **Yes**.

VLAN ID

A VLAN ID between 1 and 4095.

☞ An explanation of the term “VLAN” can be found under “VLAN” on page 148.

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.
(The first row in the list can’t be removed.)

Additional External Routes

In addition to the Default Route (see below), you can define additional, external routes.

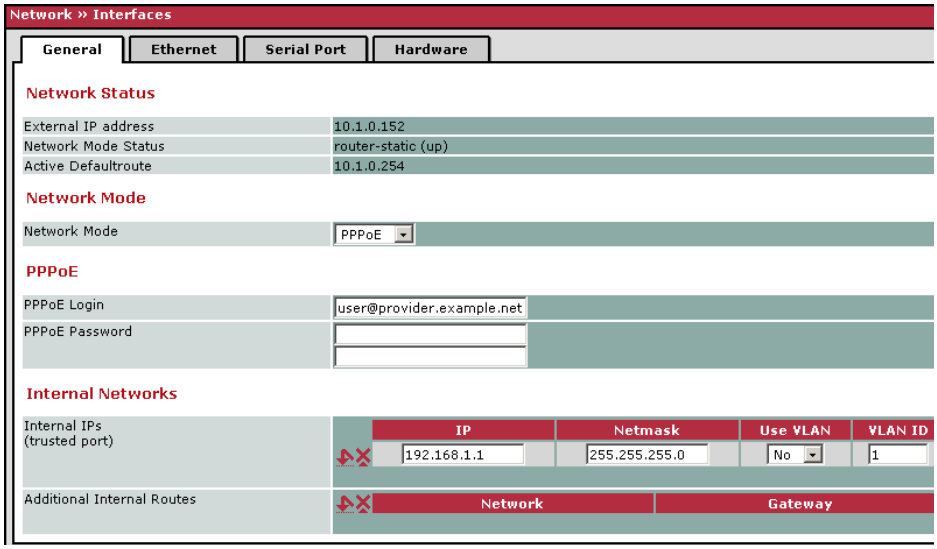
☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

IP of default Gateway

The IP address of a device in the local network (connected to the LAN port) or the IP address of a device in the external network (connected to the WAN port) can be specified here. If mGuard establishes the transition to the Internet, this IP address is specified by the Internet Service Provider (ISP). If mGuard is utilised within the LAN, the default gateway’s IP address will be specified by the network administrator.

⌧ If the local network is not known to the external router, e.g. in the case of configuration by DHCP, enter the address of your local network under Firewall → NAT, in other words 0.0.0.0/0 (see “Network Address Translation/IP Masquerading” on page 93)

Network Mode → PPPoE



PPPoE (Network Mode = PPPoE)

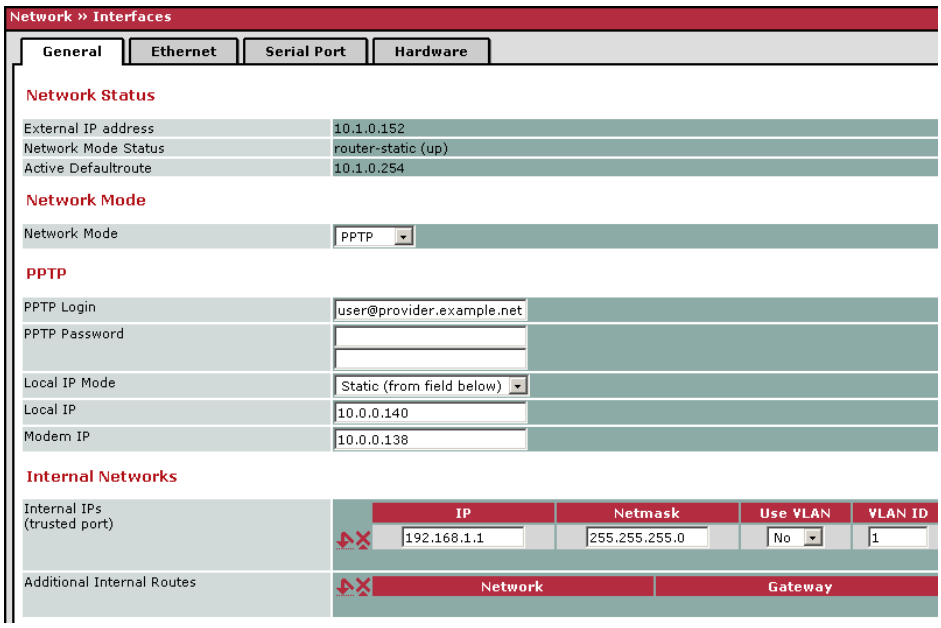
PPPoE Login

In this field, enter the user name (Login), which is expected by your Internet Service Provider (ISP) when you setup a connection to the Internet.

PPPoE Password

In this field, enter the password, which is expected by your Internet Service Provider when you setup a connection to the Internet.

Network Mode → PPTP



PPTP (Network Mode = PPTP)

PPTP Login

In this field, enter the user name (Login), which is expected by your Internet Service Provider when you setup a connection to the Internet.

PPTP Password

In this field, enter the password, which is expected by your Internet Service Provider when you setup a connection to the Internet.

Local IP Mode

Via DHCP

If the address data for the access to the PPTP server is supplied by the Internet Service Provider via DHCP, select **Via DHCP**.

In this case, you need not make an entry in the **Local IP** field.

Static (from field below)

If the address required to access the PPTP server is not supplied by the Internet Service Provider via DHCP, you must enter the IP address of the remote PPTP server and possibly that of the mGuard in the following two fields.

Local IP

The IP address under which the mGuard can be accessed by the PPTP server.

Modem IP

This is the address of the Internet Service Provider's PPTP server.

Network Mode → Router, PPPoE or PPTP

Internal Networks

Internal IPs

The Internal IP is the IP address, under which the mGuard can be accessed from the locally connected LAN.

In **Router** / **PPPoE** / **PPTP** mode, the default settings are:

IP address:	**192.168.1.1**
Local Netmask:	**255.255.255.0**

You can also specify other addresses, under which the mGuard can be accessed by devices on the locally connected network. This can be useful, for example, if the locally connected network is divided into subnetworks. In this case, multiple units on different subnetworks can access the mGuard under different addresses.

IP

IP-Adresse, under which the mGuard shall be accessible on the internal interface (LAN).

Netmask

A netmask for the internal interface (LAN).

Use VLAN

If this IP address is to be inside a VLAN, this option must be set to **Yes**.

VLAN ID

A VLAN ID between 1 and 4095.

☞ An explanation of the term “VLAN” can be found under “VLAN” on page 148.

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.
The first entry in the list cannot be deleted.

Additional internal routes

If the locally connected network includes subnetworks, you can define additional routes.

Network

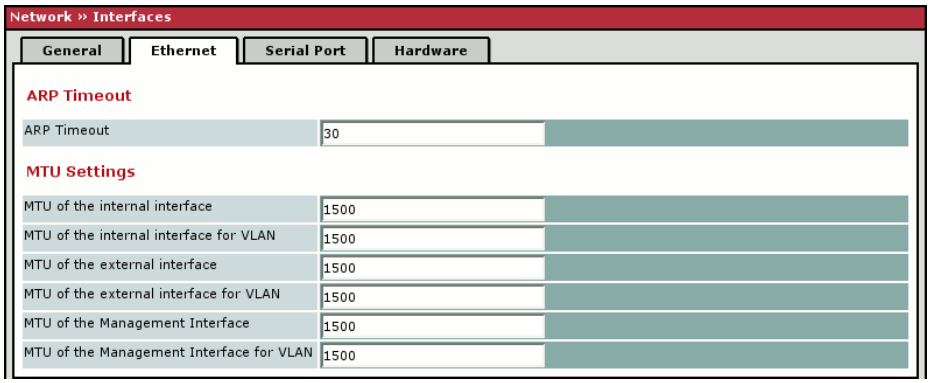
The network in CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

Gateway

The gateway used to reach this network.

☞ Please see also the “Network Example” on page 136.

Ethernet



ARP Timeout

ARP Timeout

Lifetime of entries in the ARP table.

MTU Settings

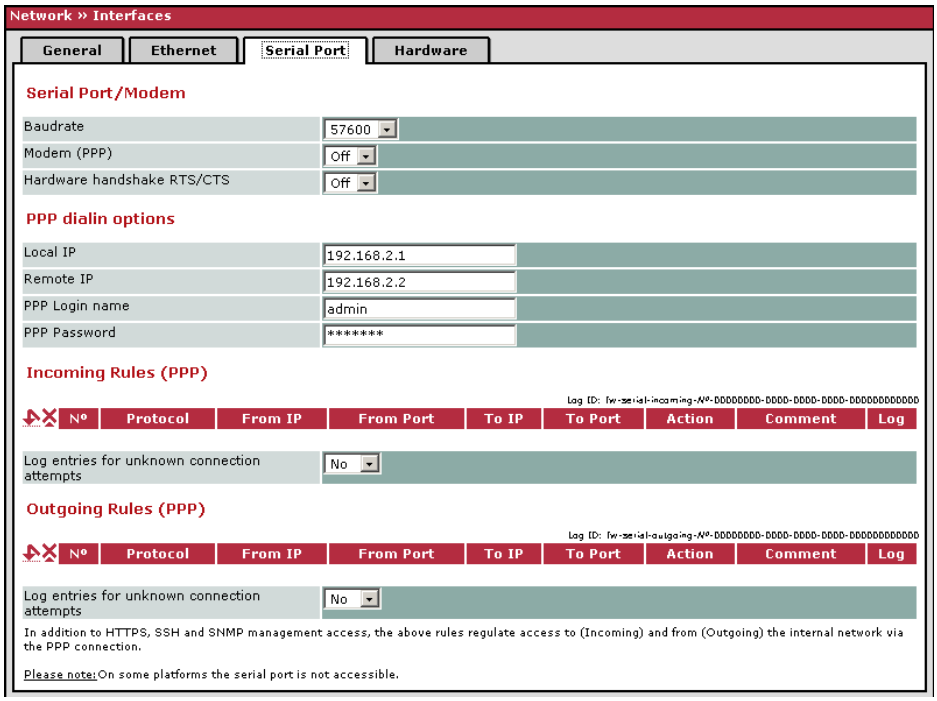
MTU of the ... interface

The Maximum Transfer Unit (MTU) defines the maximal frame size when sending from this interface and is usually 1500 for ethernet interfaces.

☒ VLAN interfaces:

VLAN frames contain 4 bytes more than frames without VLAN which may cause problems with certain network equipment. By reducing the MTU from 1500 to 1496 such problems can be avoided.

Serial Port *(only mGuard blade, delta and EAGLE mGuard)*



Some mGuards, like the mGuard blade, delta or EAGLE, offer a serial interface which is accessible from the outside. The mGuard's configuration can also take place via this interface. The following possibilities are available:

- Connecting mGuard's serial interface to the serial interface of a PC. Establish the connection to the mGuard on a PC by using a terminal programme and carry out the configuration via SSH.
- Connect a modem, which is connected to the telephone (fixed-line or GSM) network, to the mGuard's serial interface. This enables a remote PC, also connected to the telephone network, by means of a modem to establish a PPP (Point-to-Point Protocol) dial-up connection to the mGuard. On a Windows PC, in order to be able to access mGuard's web configuration user interface using the PC's web browser via TCP/IP, you must set up a dial-up network connection to the mGuard.

Serial Port / Modem

Baudrate

The speed of the serial port.

MODEM (PPP)

When set to **Off** , the serial interface can be used with a terminal client. When set to **On**, the serial interface can be used with PPP.

Hardware handshake RTS/CTS

Use the RTS and CTS signals for the PPP connection.

PPP dialin options

Local IP

IP of the mGuard for the PPP connection.

Remote IP

IP of the remote peer for the PPP connection.

PPP Login name

Login to be send by the remote PPP peer.

PPP Password

Password to be send by the remote PPP peer.

Firewall Incoming (PPP)

Firewall rules for connection from the PPP to the internal ethernet interface (LAN).

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

You have the following options for the entries:

Protocol

All means: TCP, UDP, ICMP and other IP protocols.

IP address

0.0.0.0/0 means all addresses. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

Port

(This is only evaluated by the TCP and UDP protocols)

any means each and every port.

startport:endport (e.g. 110:120) defines a range of ports.

You can specify individual ports by giving either their port number or the corresponding service name: (e.g. 110 for pop3 or pop3 for 110).

Action

Accept means that the data packets are passed through.

Reject means that the data packets are rejected so that the sender is informed that the data packets have been rejected. (In *Stealth* mode, Reject has the same effect as *Drop*.)

Drop means that the data packets are not passed through. The data packets will be discarded so that the sender will not be informed as to what happened to them.

Comment

An informational comment for this rule.

Log

You can specify - for each individual firewall rule - whether the use of the rule

☞ should be logged by setting - *Log* to **Yes**

☞ or not by setting - *Log* to **No** (factory setting).

Log entries for unknown connection attempts

If this is set to **Yes**, all attempts to establish a connection, which were not covered by the rules defined above, will be logged.

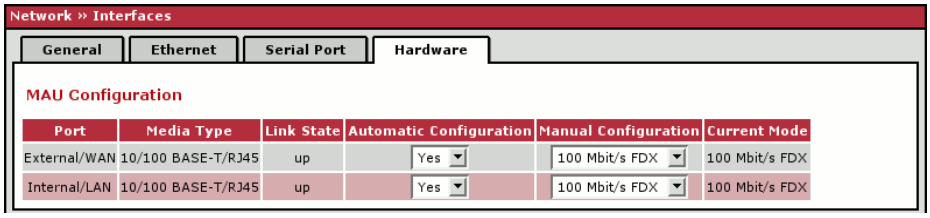
Firewall Outgoing (PPP)

Firewall rules for connection from the the internal ethernet interface (LAN) to

PPP.

(All other settings conform to *Firewall Incoming (PPP)*.)

Hardware



Configuration and status display of the ethernet ports:

MAU Configuration

Port
Name of the interface the row refers to.

Media Type
Media type of the interface.

Link State
The state of the ethernet link which can be either **Up** or **Down**.

Automatic Configuration
Yes: the interface will be configured automatically.
No: the setting from the column **Manual Configuration** will be used.

⌦ Both ports of the mGuard are configured to be connected to a computer. If you connect the ports to a hub, please note that if *Automatic Configuration* is disabled, then the Auto-MDIX function will also be deactivated, i.e. the port of the mGuard has to be connected either to the uplink port of the hub or a cross-link cable has to be used.

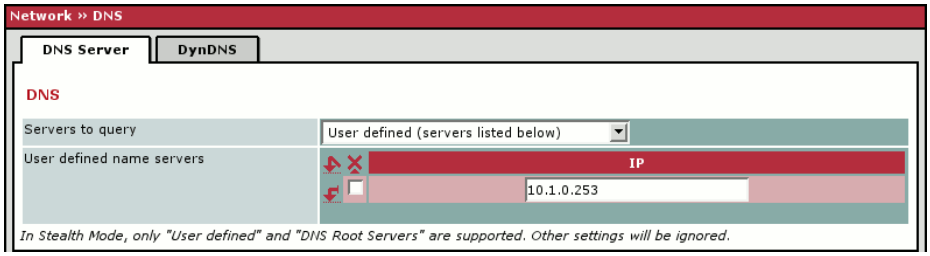
Manual Configuration
The configuration for the interface to be used when **Automatic Configuration** is set to **No**.

Current Mode
The current configuration of the interface.

Port on *(only EAGLE mGuard and mGuard smart)*
Enables/disables the ethernet port.

6.4.2 Network → DNS

DNS Server



When the mGuard has to initiate a connection on its own to a remote system (e.g. a VPN gateway or a NTP server) and it is defined in form of a host name (i.e. in the form of www.example.com) then the mGuard has to query a domain name server (DNS) for the IP address belonging to the host name.
If the mGuard is not in stealth mode locally connected clients can be configured to use the mGuard itself as a DNS server. See “IP configuration on Windows clients” on page 83.

DNS

Servers to query

Possible settings:

- DNS Root Servers
- Provider defined (i.e. via PPPoE or DHCP)
- User defined (servers listed below)

DNS Root Servers:

Queries will be sent to the DNS Root server in Internet found at the IP address which is stored in the mGuard. These addresses rarely change.

Provider defined (e.g. via PPPoE or DHCP)

With this setting, the device will use the Domain Name Server of the Internet Service Provider, which is used to access the Internet. Only select this setting if the mGuard is operated in *PPPoE* or *PPTP* mode or in *Router* mode with DHCP.

User defined (servers listed below)

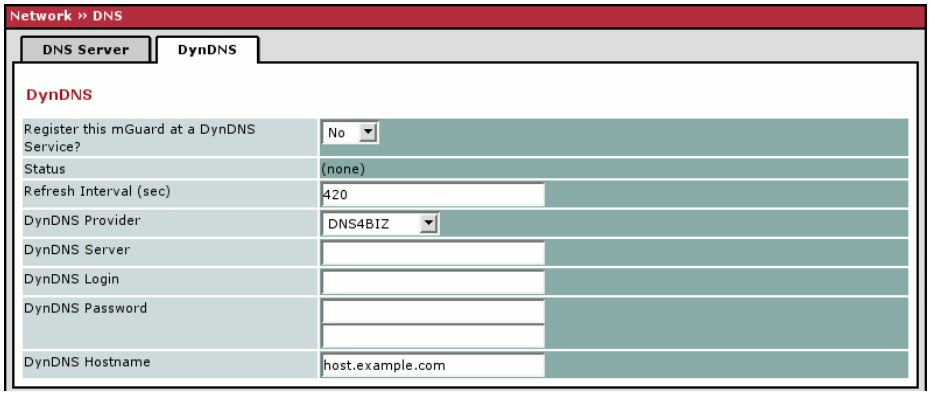
If this setting is selected, the mGuard will connect to the Domain Name Servers shown in the list of *User defined name servers*.

User defined name servers

You can enter the IP addresses of domain name servers in this list. If one of these should be used by the mGuard, select the option **User defined (servers listed below)** under *Servers to query*.

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

DynDNS



DynDNS

If a VPN connection is to be setup, at least the IP address of one of the partners must be known so that the other can setup a connection to it. This condition is not satisfied, if both sites/stations are assigned their IP addresses dynamically by their respective Internet Service Providers. In this case, a DynDNS-Service such as DynDNS.org or DNS4BIZ.com can be of assistance. The currently valid IP address of a site/station is registered under a fixed name at a DynDNS service. If you have registered with one of the DynDNS services supported by mGuard, you can enter the corresponding information in this screen.

Register this mGuard at a DynDNS Service? Yes / No

Select **Yes**, if you have registered with a DynDNS provider and the mGuard should utilize this service. In this case, the mGuard will report its current IP address – the one assigned for its own Internet access by its Internet Service Provider – to the DynDNS Service.

Refresh Interval (sec)

Standard: 420 (seconds)

Whenever the IP address of its own Internet access is changed, the mGuard will inform the DynDNS Service of its new IP address. For additional reliability, the device will also report its IP address at the interval set here. This setting is ignored for some DynDNS providers like DynDNS.org where too many updates will cause the account to be closed.

DynDNS Provider

The providers in the list support the same protocol as the mGuard. Select the name of the provider with which you are registered, e.g. DynDNS.org.

DynDNS Server

The name of the server of the DynDNS provider selected above, e.g.: dyndns.org.

DynDNS Login, DynDNS Password

Enter the user name and password that you have been assigned by the DynDNS provider here.

DynDNS Hostname

The name selected at the DynDNS Service for this mGuard - if you use a DynDNS Service and have entered the corresponding data above.

6.4.3 Network → DHCP

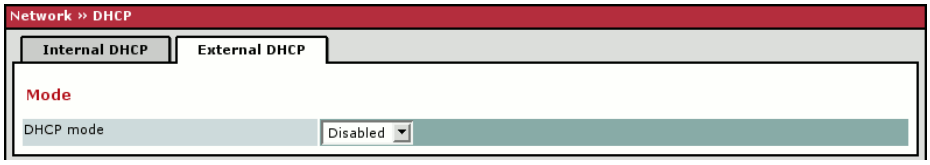
The Dynamic Host Configuration Protocol (DHCP) automatically assigns appropriate network parameters (like IP address or subnet mask) to the clients connected to the mGuard. Under *DHCP Intern* you can configure the settings for the internal interface (LAN port) and under *DHCP Extern* the settings for the external interface (WAN port).

☒ The DHCP server/relay is also operational in stealth mode.

☒ IP configuration on Windows clients

To do so, if you are using Windows XP, click on **Start, Control Panel, Network Connections**: Right click on the icon of the LAN adapter and then click on **Properties** in the pop-up menu. In the *Internet Protocol Properties* dialog on the *General* tab, select **Internet Protocol (TCP/IP)** under "This connection uses the following items" and then click on the **Properties** button. In the *Internet Protocol Properties (TCP/IP)* dialog, make the appropriate entries or settings.

Internal/External DHCP



Mode

DHCP mode

Server

The mGuard will work as an independent DHCP server.

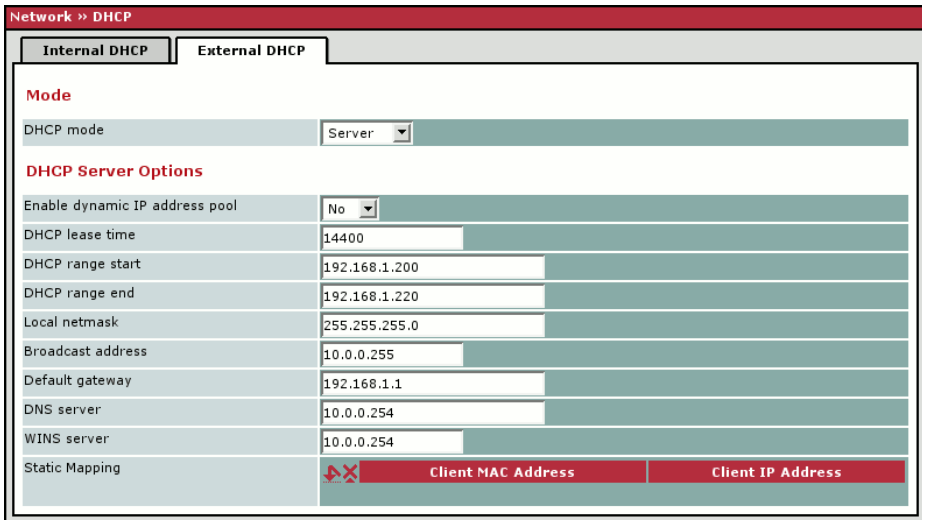
Relay

The mGuard will forward DHCP requests to other DHCP servers on its external interface (WAN).

Disabled

The mGuard will not answer DHCP requests.

DHCP mode → Server:



If the DHCP mode is set to *Server* the following options are available:

DHCP Server Options

Enable dynamic IP address pool

Select **Yes**, if you wish to use the dynamic IP address pool defined by **DHCP range start** and **DHCP range end**.

Select **No**, if you wish to use IP addresses statically assigned by the means of the MAC address (see below).

DHCP lease time

Time in seconds, for which the network configuration assigned to the client is valid. Briefly before expiration of this time the client should renew its configuration. Otherwise it may be assigned to another computer.

With enabled dynamic IP address pool:

When the DHCP server and the dynamic IP address pool has been activated, you can enter the network parameters that should be used by the client(s):

DHCP range start: **DHCP range end:**	The start and end of the address range from which the mGuard's DHCP server should assign IP addresses to its locally connected clients.
Local Netmask:	The factory setting is: 255.255.255.0
Broadcast IP:	The clients broadcast IP.
Default gateway:	This field is used to define which IP address should be used by the client(s) as the standard gateway. Usually this is the internal IP address of the mGuard.
DNS server:	This field is used to define the Domain Name Service (DNS) server which the clients can access to find out the IP address that is associated with a specific domain name. If you would like to use the DNS service of the mGuard, use the internal address of the mGuard for this field

WINS-server:	This field is used to define the Windows Internet Naming Service (WINS) server.

Static mapping

You can find out the MAC address of your client by using the following commands:

Windows 95/98/ME: Click on the **Start** button, and then click on **Run**. Type **winipcfg** in the Open box, and then click on **OK**. The MAC address will be shown as “Adapter Address”

NT/2000/XP: Select the **Start** button on the Task Bar. Select **Run**. Type **cmd.exe**. When the DOS command prompt window opens, type **ipconfig /all** The MAC address will be shown as “Physical Address”.

Linux: Start **/sbin/ifconfig** or **ip link show** in a shell.

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

You must enter the following data when assigning IP and MAC addresses:

Client MAC address

The MAC address of the client. Please enter without spaces or hyphens.

Client IP address

The IP address you wish to assign to the MAC address.

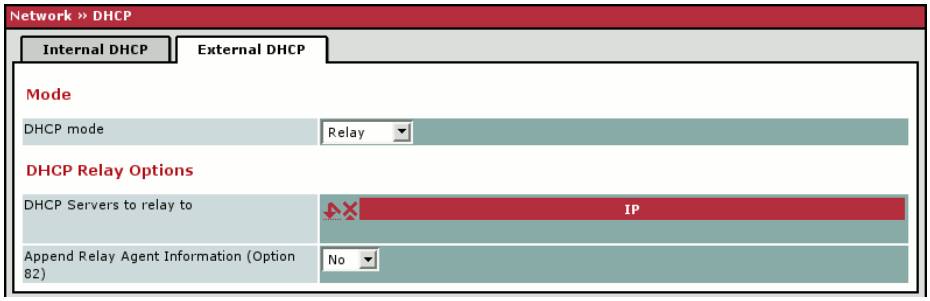
☞ The statically assigned IP addresses take priority over the dynamic IP address pool

☞ Static IP addresses and pool addresses must not overlap

☞ Do not assign one IP address to several MAC addresses, otherwise several clients will be assigned the same IP address

☞ You should only use one DHCP server per subnetwork.

DHCP mode → Relay



If the DHCP mode is set to *Relay* the following options are available:

DHCP Relay Options

DHCP servers to relay to

A list of DHCP servers, to which DHCP requests are to be passed on.

Append Relay Agent Information (Option 82)

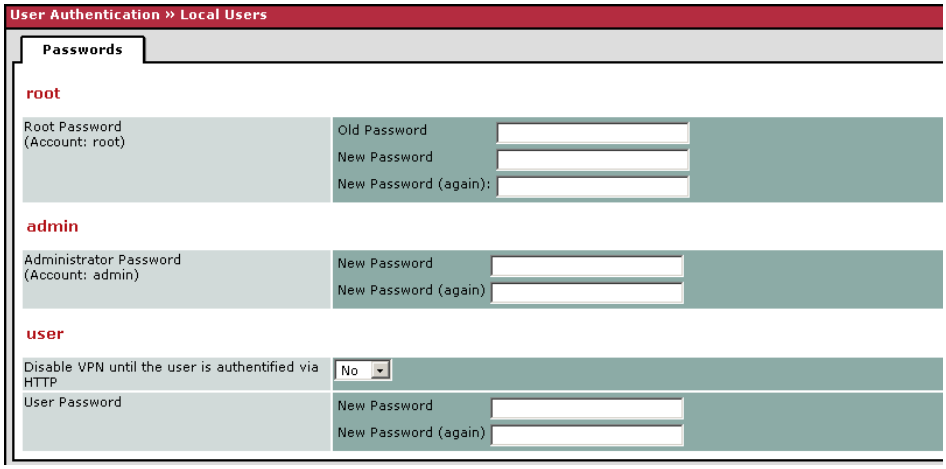
When this option is set to **Yes**, additional information according to RFC 3046 will be added.

6.5 Menu User Authentication

6.5.1 User Authentication → Local Users

The term local users refers to users who have the right, depending on their access permission level, to configure mGuard ('root' and 'administrator' access permission) or to use it ('user' access permission).

Passwords



The mGuard supports 3 levels of user authorization. To login at a specific level of authorization, the user must enter the corresponding password for the level.

Authorization level	
Root	This level (password) grants full rights to all parameters of the mGuard. Note: This is the only authorization level that allows you to setup a SSH connection to the device and to then change all of the parameters so that nothing will work anymore. If this happens, all you can do is "flash" the firmware to restore it to the factory settings (see "Flashing the firmware" on page 138). Default root password: **root**
Administrator	If you login at this level (password), you will be granted all the rights required for the configuration options that are accessible via the Web-based Administrator interface. Default user name: **admin** Default password: **mGuard** The user name **admin** cannot be changed.
User	If a user password has been defined and activated, the user must – after every restart of the mGuard – enter this password to enable a VPN connection when he or she first attempts to access any HTTP URL. If you wish to use this option, enter the desired user password once in each of the corresponding entry fields.

root

Root Password

Factory (default) setting: **root**

If you wish to change the root password, enter the current password in the *Old Password* field and then the desired new password in the two corresponding fields below.

admin

Administrator Password (Account: admin)

Factory (default) setting: **mGuard** (fixed user name: admin)

user

Disable the VPN until the user is authenticated via HTTP:

Yes / No

The factory default setting for this switch is **No**.

In the case of **Yes**, VPN connections and various other services can only be used after a user logged into the mGuard (= entered the user password) via HTTP.

All HTTP traffic will be redirected to the mGuards user login page when the user is required to login.

The change of this option becomes active after the next reboot.

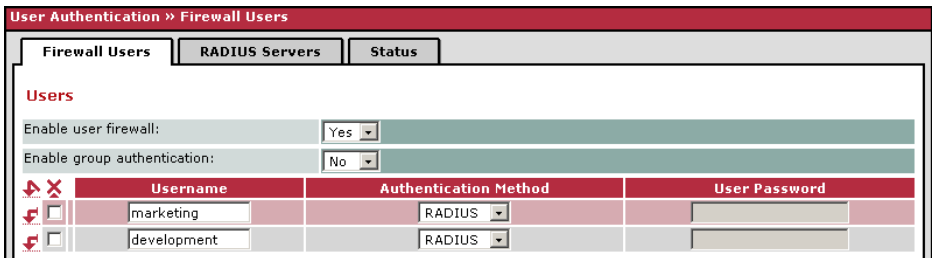
User Password

There is no factory setting for the user password. To set one, enter the desired password twice - once in each of the two fields.

6.5.2 User Authentication → Firewall Users

To eliminate private surfing on the Internet, every outgoing connection is blocked (VPN is not affected) by means of outgoing filter rules via Network security → Packet filters. Under Network security → User firewall, certain user firewalls can be assigned different firewall rules definitions, for example, permitting any outgoing connection. This user firewall rule goes into effect as soon as any respective firewall user to whom this firewall rule applies has logged in, (see “Network security → User firewall” on page 110).

Firewall Users



User

List of firewall users: their user names and authentication methods

Activate User Firewall: Yes / No

Under the menu item *User Firewall*, firewall rules can be defined and assigned to specific external users.

By clicking **Yes**, you specify that the firewall rules for the listed users are to be activated as soon as the corresponding user logs in.

Enable group authentication: Yes / No

If enabled, the mGuard will forward login requests for unknown users to the RADIUS server. On success, the RADIUS server’s reply will contain a group

name. The mGuard will then enable user firewall templates containig this group name as a user name.

The RADIUS server must be configured to deliver this group name in the “Access Accept” packet as “Filter-ID=<groupname>” attribute.

User Name

Name of the user

Authentication method: Radius / Local

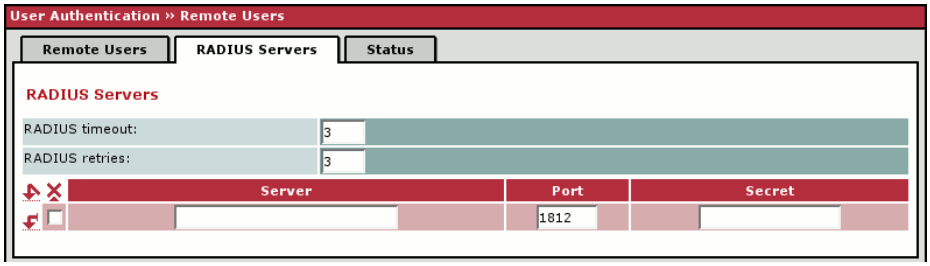
Local:

In the column *User Password*, the password must be entered that has been assigned to the user

Radius:

If a user logs in, the mGuard transmits the login and password entered to the radius server for verification. If the verification is positive, the user will gain access.

Radius Server



Radius Server

Radius Timeout

Specifies (in seconds) how long the mGuard will wait for the answer from the radius server. Default: 3 (seconds)

Radius retries:

Specifies how often requests will be repeated to the radius server after a radius timeout has occurred. Default: 3

Server

Name of the server or IP address

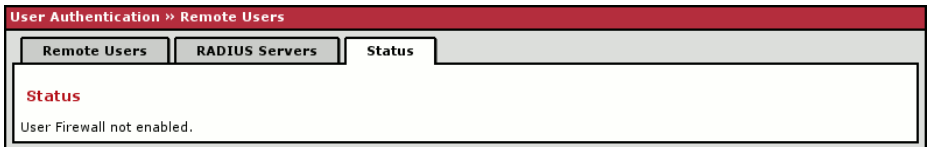
Port

The port number used by the radius server

Secret

Server password

Status



If the user firewall is activated, its status will be displayed here.

6.6 Menu Network Security

6.6.1 Network Security → Packet Filter

The mGuard has an integrated *Stateful Packet Inspection Firewall*. The connection data for each active connection is collected in a database (connection tracking). Therefore, it is only necessary to define rules for one direction – data from a connection's other direction – and only this will be automatically passed through. A side-effect is that (when reconfiguring) existing connections will not be dropped even if a corresponding new connection may not be setup.

Factory settings for the packet filter:

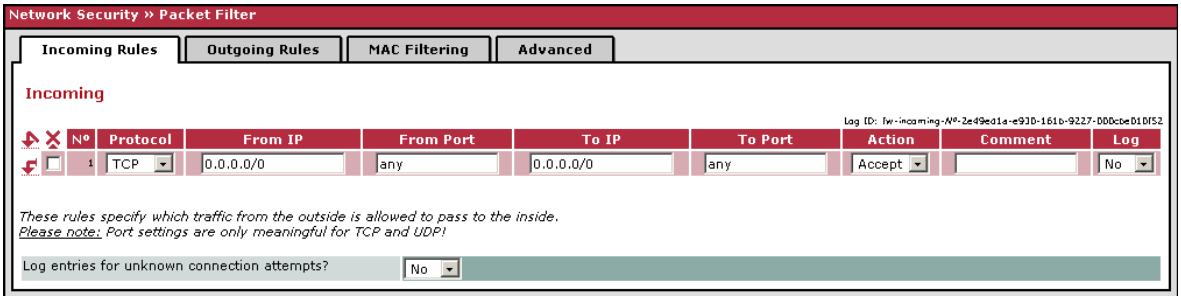
- All incoming connections will be rejected (except VPN).
- The data packets of all outgoing connections will be passed through.

☒ VPN connections are not subject to the firewall rules defined in this menu. You can define firewall rules for each individual VPN connection in the **VPN → Connections** menu.

☒ The anti-virus function (see "Web security → HTTP" on page 113, "Web security → FTP" on page 115, "E-mail security → POP3" on page 119, "E-mail security → SMTP" on page 122) has priority over the firewall rules defined here and can partially override them. This behaviour can be overridden in the **Network security → Packet filters, Extended settings menu** by setting the switch to **Connections scanned for viruses are subject to firewall rules** – see "Extended settings", "Anti-virus scanner" on page 103.

☒ If multiple firewall rules are set, they will be searched in the order in which they are listed (from top to bottom) until a suitable rule is found. This rule will then be applied. If further down in the list there are other rules, which would also fit, they will be ignored.

Incoming Rules



Incoming

Lists the firewall rules that have been set. These rules apply for incoming data connections, i.e. ones which were initiated by an external system.
If no rule has been set, all incoming connections (except VPN) will be dropped (= factory setting).

☞ Inserting, moving and deleting rows is explained under "Working with tables" on page 43.

You have the following options for the entries:

Protocol

All means: TCP, UDP, ICMP and other IP protocols.

IP address

0.0.0.0/0 means all addresses. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

Port

(This is only evaluated by the TCP and UDP protocols)

any means each and every port.

startport:endport (e.g. 110:120) defines a range of ports.

You can specify individual ports by giving either their port number or the corresponding service name: (e.g. 110 for pop3 or pop3 for 110).

Action

Accept means that the data packets are passed through.

Reject means that the data packets are rejected so that the sender is informed that the data packets have been rejected. (In *Stealth* mode, Reject has the same effect as Drop (see below).)

Drop means that the data packets are not passed through. The data packets will be discarded so that the sender will not be informed as to what happened to them.

⌦ In Stealth mode, **Reject** is not supported.

Comment

An informational comment for this rule.

Log

You can specify - for each individual firewall rule - whether the use of the rule

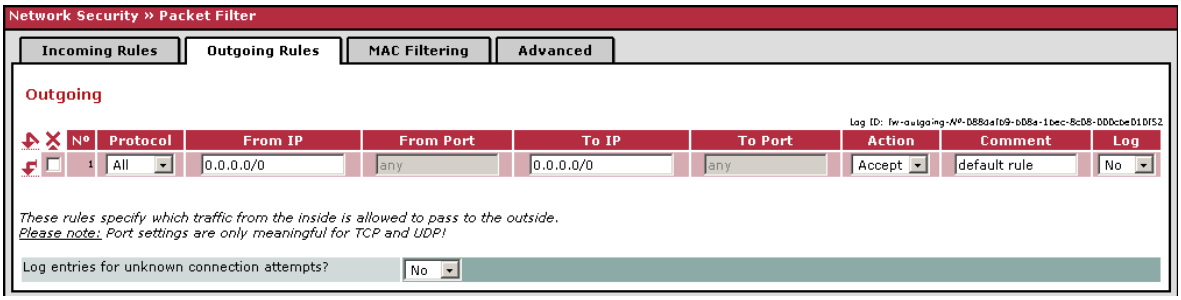
☞ should be logged by setting - *Log* to **Yes**

☞ or not by setting - *Log* to **No** (factory setting).

Log entries for unknown connection attempts

If this is set to Yes, all attempts to establish a connection, which were not covered by the rules defined above, will be logged.

Outgoing Rules



Lists the firewall rules that have been set. These rules apply for outgoing connections; i.e. ones which were initiated internally to communicate with a remote site.

The default (factory) setting is a rule that allows all outgoing connections.

If no rule is set, all outgoing connections are forbidden (except VPN).

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

You have the following options for the entries:

Protocol

All means: TCP, UDP, ICMP and other IP protocols.

IP address

0.0.0.0/0 means all addresses. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

Port

(This is only evaluated by the TCP and UDP protocols)

any means each and every port.

startport:endport (e.g. 110:120) defines a range of ports.

You can specify individual ports by giving either their port number or the corresponding service name: (e.g. 110 for pop3 or pop3 for 110).

Action

Accept means that the data packets are passed through.

Reject means that the data packets are rejected so that the sender is informed that the data packets have been rejected. (In *Stealth* mode, Reject has the same effect as *Drop* (see below).)

Drop means that the data packets are not passed through. The data packets will be discarded so that the sender will not be informed as to what happened to them.

⌦ In Stealth mode, **Reject** is not supported.

Comment

An informational comment for this rule.

Log

You can specify - for each individual firewall rule - whether the use of the rule

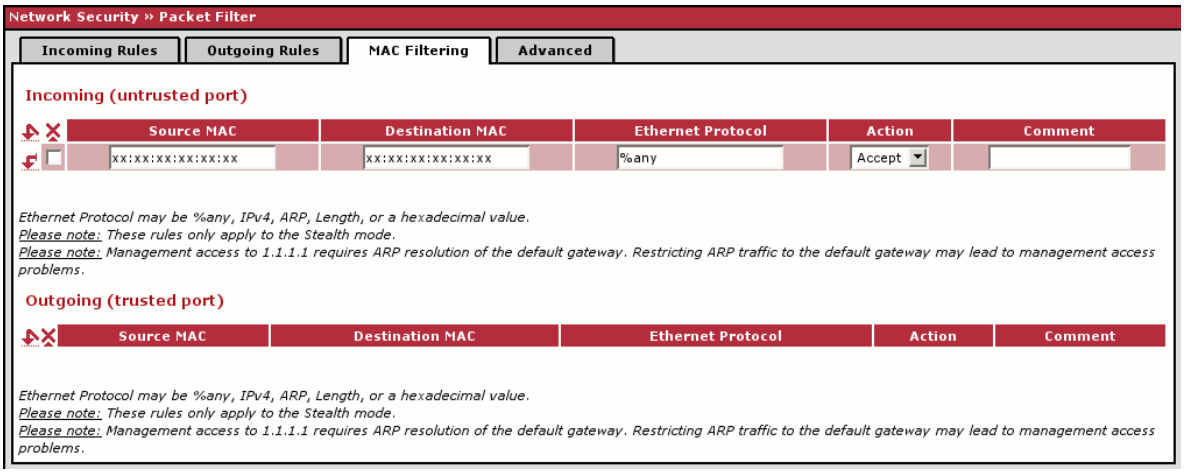
☞ should be logged by setting - *Log* to **Yes**

☞ or not by setting - *Log* to **No** (factory setting).

Log entries for unknown connection attempts

If this is set to Yes, all attempts to establish a connection, which were not covered by the rules defined above, will be logged.

MAC Filtering


Network Security » Packet Filter
Incoming Rules
Outgoing Rules
MAC Filtering
Advanced
Incoming (untrusted port)
Source MAC
Destination MAC
Ethernet Protocol
Action
Comment
xx:xx:xx:xx:xx:xx
xx:xx:xx:xx:xx:xx
%any
Accept
Ethernet Protocol may be %any, IPv4, ARP, Length, or a hexadecimal value.
Please note: These rules only apply to the Stealth mode.
Please note: Management access to 1.1.1.1 requires ARP resolution of the default gateway. Restricting ARP traffic to the default gateway may lead to management access problems.
Outgoing (trusted port)
Source MAC
Destination MAC
Ethernet Protocol
Action
Comment
Ethernet Protocol may be %any, IPv4, ARP, Length, or a hexadecimal value.
Please note: These rules only apply to the Stealth mode.
Please note: Management access to 1.1.1.1 requires ARP resolution of the default gateway. Restricting ARP traffic to the default gateway may lead to management access problems.

Beside the IP firewall (OSI Layer 3/4), which filters ICMP messages and TCP/UDP connections, the mGuard, when operating in stealth mode, can additionally filter for MAC addresses and ethernet protocols (OSI Layer 2).

In contrast to the IP firewall, the MAC filter is stateless. This means an additional rule must be created for some rules in the opposite direction where necessary.

When no rules are defined, all ARP and IP frames are allowed.

⌦ Please note the annotations on the screen when you define MAC filtering ru-

les.

⌦ Rules defined here supersede the IP firewall rules.

Source MAC

Definition of the source MAC address. **xx:xx:xx:xx:xx:xx** is a wildcard for all MAC addresses.

Destination MAC

Definition of the destination MAC address. **xx:xx:xx:xx:xx:xx** is a wildcard for all MAC addresses. The values **ff:ff:ff:ff:ff:ff** is the broadcast MAC address, to which, for example, all ARP requests are being sent.

Ethernet Protocol

%any is a wildcard for all ethernet protocols. Protocols can be specified by name or hexadecimal value, for example:

- IPv4 or 0800
- ARP or 0806

Action

Accept means that frames can pass.

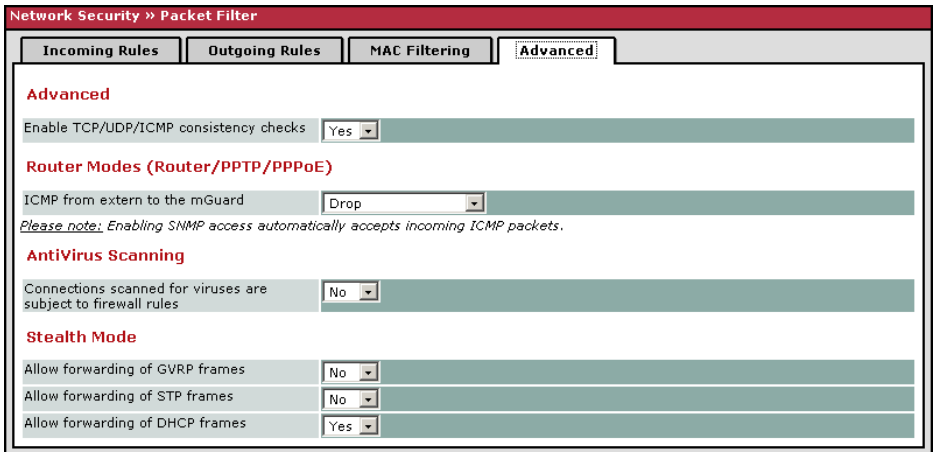
Drop means to drop frames.

Comment

An informational comment for this rule.

☞ The MAC filter does not support logging.

Advanced



The following settings influence the basic behavior of the firewall.

Advanced

Enable TCP/UDP/ICMP consistency checks

When set to **Yes** the mGuard performs various checks for wrong checksums, packet sizes, etc. and drops packets failing the check.

The factory default for this option is **Yes**.

Router Modes (Router/PPTP/PPPoE)

ICMP from extern to the mGuard

With this option you can control which ICMP messages from the external network are accepted by the mGuard. You have the following options:

Drop: All ICMP-messages sent to the mGuard from the external network will be dropped.

Allow ping requests: Only ping requests (ICMP message type 8) from the external network will be accepted.

Allow all ICMPs: All ICMP messages from the external network will be accepted.

Anti-virus scanner

Connections scanned for viruses are subject to firewall rules: Yes / No

In the *Web security →HTTP*, *Web security →FTP*, *E-mail security→POP3*, *E-mail security →SMTP* menus, a list of server connections can be created on the *Anti-virus protection* tab. Files that enter mGuard via these connections are scanned for viruses (in the case of SMTP, outgoing mGuard files) .

If firewall packet filters are set (Network security →Packet filters and/or Network security → User firewall) which relate to these connections and prevent them, these will only be taken into consideration if the **Connections scanned for viruses are subject to firewall rules** switch is set to Yes. In the case of No (= default setting), the rules that have been set for the anti-virus function have priority. Firewall packet filters that contradict them are overridden.

VPN connections are not affected because the anti-virus function is not available for VPN connections.

Stealth Mode

Allow forwarding of GVRP frames

The GARP VLAN Registration Protocol (GVRP) is used by GVRP capable switches to exchange configuration information.

By setting this switch to **Yes**, GVRP frames are allowed to traverse the mGuard in Stealth Modus.

Allow forwarding of STP frames

The Spawning-Tree Protocol (STP) (802.1d) is used by bridges and switches to detect and avoid loops in the network topology.

By setting this switch to **Yes**, STP frames are allowed to traverse the mGuard in Stealth Modus.

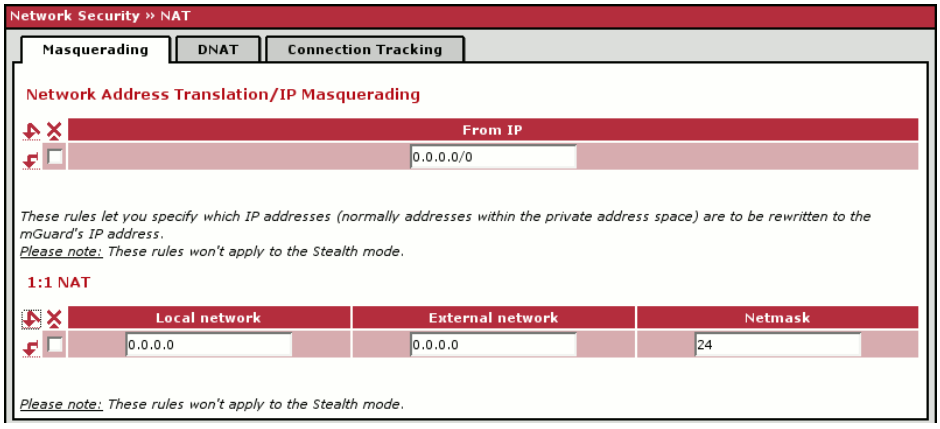
Allow forwarding of DHCP frames

Allow the client to retrieve an IP address using DHCP independently from the outgoing firewall rules.

This switch is set to **Yes** per default.

6.6.2 Network Security → NAT

Masquerading


Network Security » NAT
Masquerading
DNAT
Connection Tracking
Network Address Translation/IP Masquerading
From IP
0.0.0.0/0
These rules let you specify which IP addresses (normally addresses within the private address space) are to be rewritten to the mGuard's IP address.
Please note: These rules won't apply to the Stealth mode.
1:1 NAT
Local network
External network
Netmask
0.0.0.0
0.0.0.0
24
Please note: These rules won't apply to the Stealth mode.

Network Address Translation/IP Masquerading

Lists the rules set for NAT (**N**etwork **A**ddress **T**ranslation).

In the case of outgoing data packets, the device can translate the sender‘s IP address (From IP) in the internal network to the device‘s own external address. This technique is called NAT (Network Address Translation).

This method is used whenever the internal address cannot or should not be routed externally, e.g. since it is in a private address space such as 192.168.x.x or because you wish to keep the internal network structure hidden.
This method is also called *IP-Masquerading*.

- If the mGuard is in *PPPoE/PPTP* mode, NAT must be activated to enable access to the Internet. If NAT is not activated, the device will only allow VPN connections.
- When using more than one IP address for an interface, always the first IP address of the list will be used for IP-Masquerading.
- These rules don't apply to the stealth mode.

Factory setting: NAT is not active.

☞ Inserting, moving and deleting rows is explained under "Working with tables" on page 43.

You have the following options for the entries:

From IP

0.0.0.0/0 means all addresses, i.e. all internal IP addresses will be translated using NAT. To enter an address space, use the CIDR notation – see "CIDR (Classless InterDomain Routing)" on page 135.

1:1 NAT

Lists the rules set for 1:1 NAT (**N**etwork **A**ddress **T**ranslation), which mirrors addresses from the internal network into the external network.

In the following example the mGuard is inside the net 192.168.0.0/24 with its internal interface and inside the net 10.0.0.0/24 with its external interface. By using 1:1 NAT, the computer with the IP 192.168.0.8 can be reached under the IP 10.0.0.8 in the external network.

192.168.0.0/24 **10.0.0.0/24**

- These rules don't apply to the stealth mode.

Factory setting: NAT is not active.

☞ Inserting, moving and deleting rows is explained under "Working with tables" on page 43.

You have the following options for the entries:

Local network

The network address on the local interface (LAN).

External network

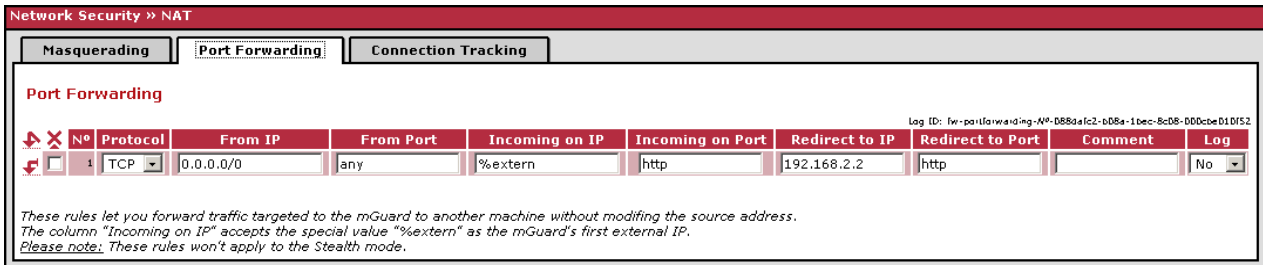
The network address on the external interface (WAN).

Netmask

The network mask as a value between 1 and 32 for the local and external network address. (See also: “CIDR (Classless InterDomain Routing)” on page 135.)

Port Forwarding

Lists the rules set for port forwarding.



Port forwarding performs the following: The headers of data packets incoming from the external network, which are addressed to the mGuard's external IP address (or one of its external IP addresses) and to one of the ports on the mGuard, will be rewritten to forward them to a specific port on a specific system in the internal network. In other words, both the IP address and the port number (in the header of the incoming data packets) will be changed.
This method is also called Destination NAT.

- The rules set here have priority over the settings made in the **Firewall → Incoming** menu.
- These rules don’t apply to the stealth mode.

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

Protocol

Specify the protocol which the rule should govern.

From IP

The source IP for which forwarding shall be performed.

From Port

The source port for which forwarding shall be performed.

any specifies any port.

Ports may be either port numbers or services names, like *pop3* for port 110 or *http* for port 80.

Incoming on IP

Enter the external IP address (or one of the external IP addresses) of the mGuard here.

OR

If the destination IP address of the mGuard is assigned dynamically, this cannot be specified. In this case, use the following variable: **%extern**

- The variable „%extern“ always corresponds to the first IP address of the address list, when using more than one external IP address.

Incoming on Port

The original destination port of the incoming data packets must be entered in this field.

Redirect to IP

In this field, enter the internal IP address to which the data packets should be forwarded. The original destination address will be overwritten with the address entered in this field.

Redirect to Port

In this field, enter the port to which the data packets should be forwarded. The original entry for the destination port will be overwritten with the port specified in this field.

Comment

An informational comment for this rule.

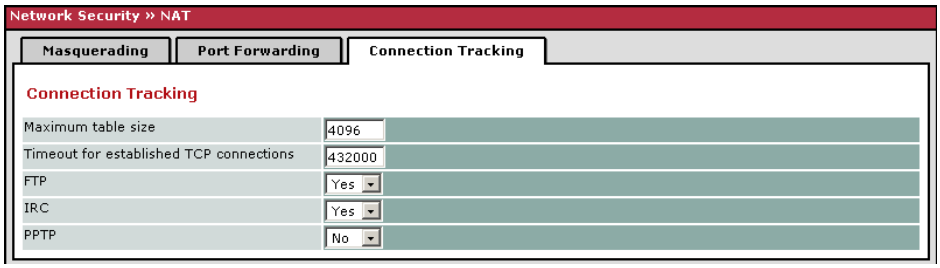
Log

You can specify - for each individual port forwarding rule - whether the use of the rule

☞ should be logged by setting - *Log* to **Yes**

☞ or not by setting - *Log* to **No** (factory setting).

Connection Tracking



Connection Tracking

Maximum table size

This entry specifies an upper limit for maximum number of connections being tracked.

The default setting is selected in such a way that it is never reached under normal conditions. During attacks it may be easily reached so that this limit provides an additional protection. If special requirements should be present in your operating environment, then you can increase this value.

Timeout for established TCP connections

When a TCP connection was not used during the interval specified here, its connection information will be deleted. A connection which was rewritten by NAT (not 1:1-NAT) must be reestablished after it was deleted.

The factory default are 432000 seconds (5 days).

FTP

If an outgoing FTP (protocol) connection is setup to download data, there are two alternatives as to how the data will be transmitted: When using “active FTP” the server called will call the calling system back to establish a connection for the transfer of data. When using “passive FTP” the calling system will establish this additional connection for the data transfer. To let the data of this additional connection pass through the firewall, **Enable “FTP” NAT/Connection Tracking support** must be set to **Yes** (factory setting).

IRC

This is similar to “FTP”: When the IRC protocol is used for chatting in the Internet, incoming connections must also be permitted after the connection has been established actively. In this case, **Enable “IRC” NAT/Connection Tracking support** must be set to **Yes** so that the firewall will permit these connections (factory setting).

PPTP

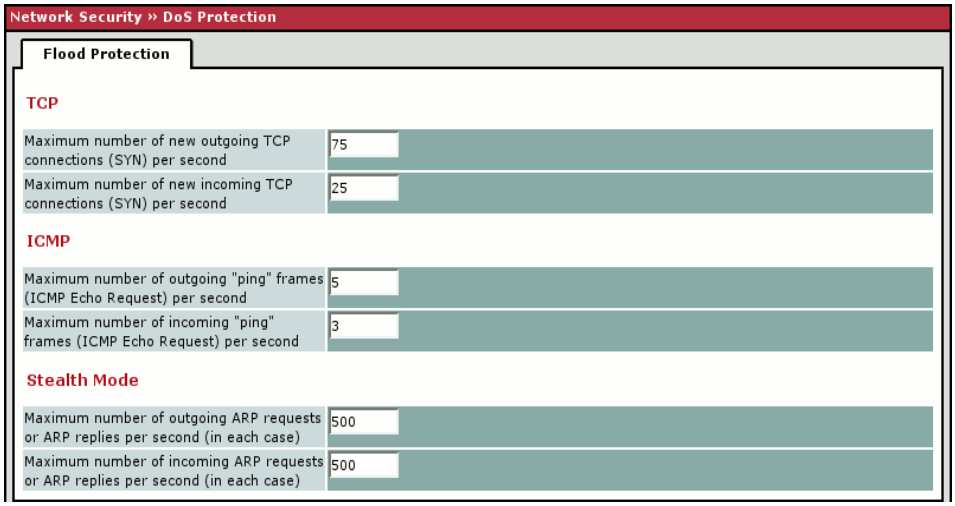
This need only be set to **Yes** under the following condition:

if a local system should establish a VPN connection via PPTP to an external system without help from the mGuard.

The factory setting is **No**.

6.6.3 Network Security → DoS Protection

Flood Protection


Network Security » DoS Protection
Flood Protection
TCP
Maximum number of new outgoing TCP connections (SYN) per second
75
Maximum number of new incoming TCP connections (SYN) per second
25
ICMP
Maximum number of outgoing "ping" frames (ICMP Echo Request) per second
5
Maximum number of incoming "ping" frames (ICMP Echo Request) per second
3
Stealth Mode
Maximum number of outgoing ARP requests or ARP replies per second (in each case)
500
Maximum number of incoming ARP requests or ARP replies per second (in each case)
500

TCP

Maximum number of new outgoing TCP connections (SYN) per second
Default: 75

Maximum number of new incoming TCP connections (SYN) per second

Default: 25

These two settings define upper limits for the allowed incoming and outgoing TCP connections per second. The default values will never be reached in normal operation. However, since they can be easily reached in the event of an attack, the limits provide additional security. If your operational environment has special requirements, you can increase these values.

ICMP

Maximum number of outgoing 'ping' frames (ICMP Echo Request) per second
Default: 5

Maximum number of incoming 'ping' frames (ICMP Echo Request) per second
Default: 3

These two settings define upper limits for the allowed incoming and outgoing ping frames per second. The default values will never be reached in normal operation. However, since they can be easily reached in the event of an attack, the limits provide additional security. If your operational environment has special requirements, you can increase these values.

Stealth Mode

Maximum number of outgoing ARP requests or ARP replies per second (in each case)
Default: 500

Maximum number of incoming ARP requests or ARP replies per second (in each case)
Default: 500

These two settings define upper limits for the allowed incoming and outgoing ARP requests and ARP replies per second. The default values will never be

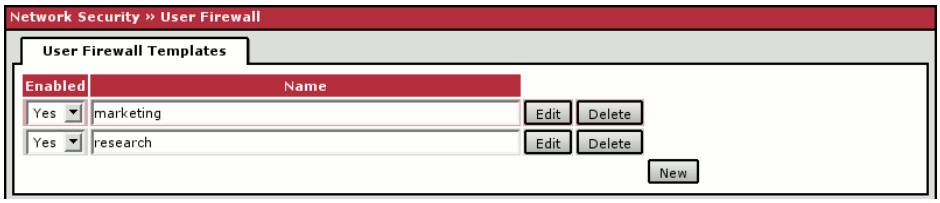
reached in normal operation. However, since they can be easily reached in the event of an attack, the limits provide additional security. If your operational environment has special requirements, you can increase these values.

6.6.4 Network Security → User Firewall

The user firewall is operative exclusively for firewall users, i.e., users that registered as firewall users – see "User Authentication → Firewall Users" on page 87. A set of firewall rules, a so-called template, can be assigned to each firewall user.

⌦ The anti-virus function (see "Menu Web Security (not on blade control unit)" on page 102 and "Menu Email Security (not on blade control unit)" on page 107) has priority over the firewall rules defined here and can partially override them. This behaviour can be overridden in the **Network Security → Packet Filters**, Extended Settings menu by setting the switch to **Connections scanned for viruses are subject to firewall rules** – see "Network Security → User Firewall", "Advanced", "Connections scanned for viruses are subject to firewall rules: Yes / No" on page 93.

User Firewall Templates



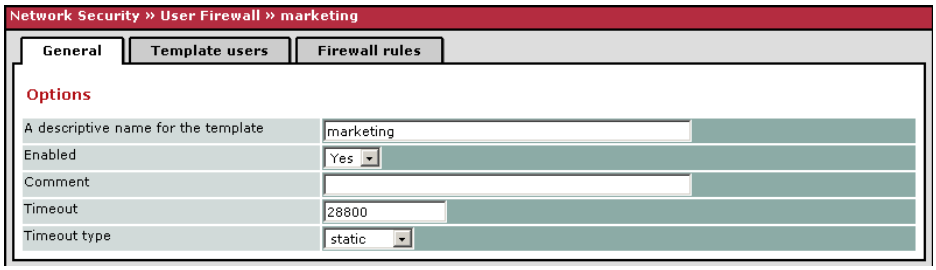
All defined user firewall templates are listed here. A template can consist of several firewall rules. A template can be assigned to several users.

- **Enabling / Disabling a defined user firewall templat**e:
  Set Parameters active to Yes or No, respectively.
- **Editing a defined user firewall template:**
  Click the Edit button next to the list entry.
- **Deleting a defined user firewall template:**
  Click the Delete button next to the list entry.
- **Defining a new user firewall template**:
  1. Click the **New** button.
     Result: the list of user firewall templates displayed will be supplemented with a new entry.
  2. Next to the list entry, click the **Edit** button.

User Firewall → Define Template

After clicking on the **Edit** button, the following page will appear:

General



Options

A descriptive name for the template

You can name or rename the user firewall template as desired.

Active: Yes / No

For **Yes**, the user firewall template becomes active as soon as external users log onto the mGuard who are listed on the *Template User* register card (see below) and who have been assigned firewall rules. It doesn't matter from which computer and under which IP address the user logs in. The assignment of user firewall rules is based on the authentication data that the user enters during the login (user name, password).

Comments

Optional: explanatory text

Timeout

Default: 28800.

Indicates the time in seconds at which point the firewall rules will be deactivated. If the user session lasts longer than the timeout time defined here, the user will have to repeat the login process.

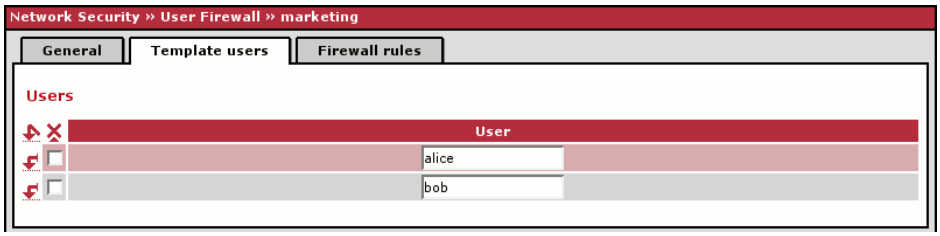
Timeout type: static / dynamic

With *static* timeout users are logged out automatically, as soon as the specified timeout elapsed. With *dynamic* timeout users are logged out automatically after all connections were closed by the user or did expire on the mGuard and afterwards the timeout elapsed.

On the mGuard a connection expires when no data was sent for a certain period, depending on the protocol being used:

Protocol	Expiration after non-usage
TCP	5 days This value is configurable, plesase see “Timeout for established TCP connections” on page 96. Plus 120 additional seconds after the connection expired. (This also includes connections closed by the user.)
UDP	30s after traffic in one direction 180s after traffic in both directions
ICMP	30s
Other	10min

Template User

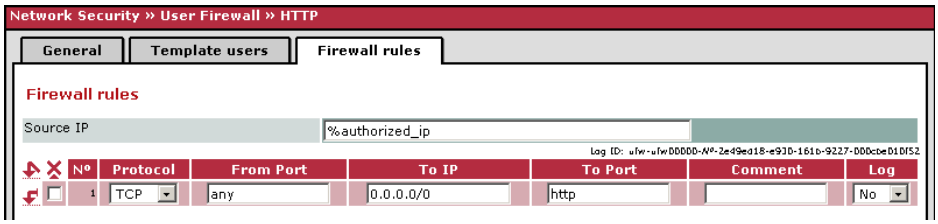


Users

User Name

Enter the names of users here. The names must correspond to those that have been defined in User Authentication → External Users - for more information, see “User Authentication → Firewall Users” on page 87

Firewall Rules



Firewall Rules

Source IP

The IP address from which the user connected to the mGuard. “%authorized_ip” is a placeholder for the address.

If several firewall rules have been defined and activated for a single user, these will be queried in sequence from top to bottom, until the appropriate rule has been located. This rule will then be applied. If further rules are defined in the rule list that would also be suitable, these are ignored.

You are offered the following options for entries:

Protocol

All encompasses: TCP, UDP, ICMP and other IP protocols.

From Port/To Port

(is only evaluated for the TCP and UDP protocols)

Any designates any port.

Startport:Endport (e.g. 110:120) designates a port range.

Individual ports can be entered either using the port number or the corresponding service names: (e.g. http for 80 or pop3 for 110).

To IP

0.0.0.0/0 means all IP addresses. In order to specify an IP-address range, use CIDR notation - see e “CIDR (Classless InterDomain Routing)” on page 135.

Comment

A comment can be entered as desired for this rule.

Log

For each individual firewall rule, you may define whether, once the rule is activated

- the event should be logged - set *Log* to **Yes**
- or not - set *Log* to **No** (default setting).

6.7 Menu Web Security (not on blade control unit)

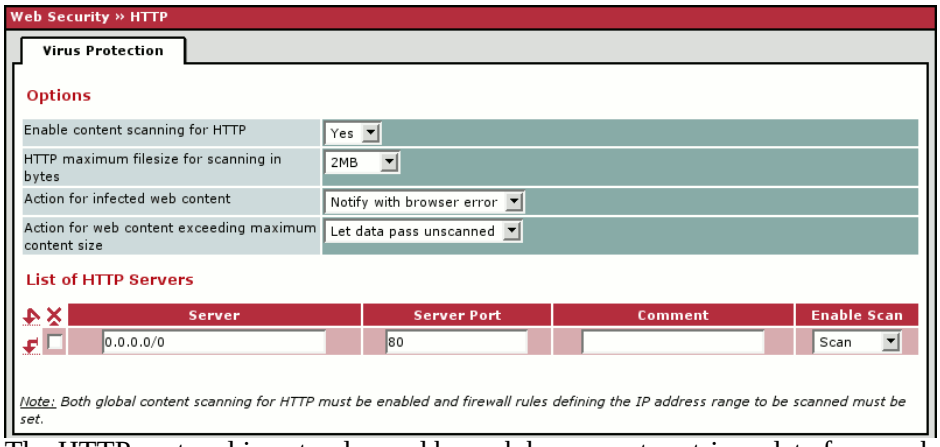
6.7.1 *Web Security → HTTP*

Requirements:

The following requirements must be fulfilled for the use of the virus filter:

- Anti-virus license has been installed. Instructions on how to request and install a license can be found under the section "Management → Update" on page 54.
- Access to an update server with the current versions of the virus signatures (see section "Management → Update" on page 54).

Virus Protection


Web Security » HTTP
Virus Protection
Options
Enable content scanning for HTTP
Yes
HTTP maximum filesize for scanning in bytes
2MB
Action for infected web content
Notify with browser error
Action for web content exceeding maximum content size
Let data pass unscanned
List of HTTP Servers
Server
Server Port
Comment
Enable Scan
0.0.0.0/0
80
Scan
Note: Both global content scanning for HTTP must be enabled and firewall rules defining the IP address range to be scanned must be set.

The HTTP protocol is not only used by web browsers to retrieve data from web sites, but is also used in many other applications. It is also used, for example, to download files, e.g. software updates, or to initialize multimedia streams.

The transferred file will only passed on after it has been loaded completely and checked. Consequently, user software may react less quickly when downloading larger files or whenever the download speeds are slow.

⌧ To check the anti-virus protection for HTTP, you can download the safe Eicar test virus which is available for test purposes at http://www.eicar.org/anti_virus_test_file.htm.

Options

Anti-virus protection for HTTP: Yes / No

In the case of **Yes**, files received are scanned for viruses by mGuard if they arrive via HTTP connections contained in the list of HTTP servers defined below.

Scanning up to a pre-set volume of:

5 MB. The maximum size of the files to be checked is specified here. Files that are larger are not scanned. Depending on the "When size limit is exceeded" setting, an error message is sent to the browser in the event of a file exceeding the size limit, or the system automatically switches to throughput mode.

If the mGuard does not have enough memory to save a file completely or to decompress it, a corresponding error message will be sent to the user's client software (browser or download manager) and an entry will be written to the anti-virus log. In this case, you have the following options:

- You can try again later to download the file
- You can temporarily deactivate the virus filter for the corresponding server
- You can set the parameter to "Let the data pass unscanned".

Action for infected web content

Notify with browser error

If the virus filter detects a virus in the data transferred from an HTTP server to the HTTP client, an error message will be sent to the HTTP client. The handling of this error message depends on the respective HTTP client. A web browser will display the error message in the form of an HTML page. If a file that is downloaded within an HTML page - e.g. a graphic file - is infected, this file will not be displayed in the browser. If a download manager is used to download a file via HTTP, the error message will be displayed by the download manager.

Action for web content exceeding the maximum content size

Let data pass unscanned

When this option is selected the virus filter will allow the files, which exceed the filesize set, to pass through unscanned.

☞ In this case, the data is not checked for viruses!

Block data

If this option is selected, the system will terminate the download and send an error message to the client software whenever the content exceeds the maximum size.

List of HTTP Servers

You can select the servers, whose traffic should be filtered, and specify for each IP address whether or not the anti-virus protection should be activated. It is also possible to enter “trusted” servers.
Examples:

Global activation of the anti-virus protection for HTTP:

Server	Server Port	Comment	Enable Scan
0.0.0.0/0	80	HTTP out to any	Scan

Scan a subnet and exclude a “trusted” HTTP server:

Server	Server Port	Comment	Enable Scan
192.168.2.5	80	trusted HTTP	No Scan
192.168.2.0/24	80	untrusted HTTP	Scan

Scan a single “untrusted” HTTP server in a subnet:

Server	Server Port	Comment	Enable Scan
192.168.2.5	80	untrusted HTTP	Scan
192.168.2.0/24	80	trusted HTTP	No Scan

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

⌧ To activate the virus filter for HTTP or “FTP over HTTP” connections over a proxy, insert a new row and change the default port 80 to the proxy’s port. Common proxy ports are 3128 and 8080.

⌧ The set of rules will be processed from the top down, therefore, the order of the rules is also decisive for the results.

⌧ The virus filter can only handle a limited number of simultaneous connections to mail, HTTP and FTP servers. Exceeding this number will cause further

connection attempts to be refused.

⌦ Scanning for viruses may allow outgoing connections which are usually blocked by the firewall rules defined under “Network Security → Packet Filter” and “Network Security → User Firewall”. Please see “Connections scanned for viruses are subject to firewall rules: Yes / No” on page 93 to adjust this behaviour.

You have the following options for the entries:

Server

0.0.0.0/0 means all addresses, i.e. the system will filter the traffic of all HTTP servers. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

⌦ Since an attempt to setup a connection is first handled by the proxy, if a nonexistent server is requested (e.g. a bad IP address) the user software will act as though the connection to the server had been established, but no data was sent. If the list contains the exact server addresses, this behavior can be prevented, since the proxy will then only take requests addressed to the servers given in the list.

Server Port

Enter the number of the port for the HTTP protocol in this field. The default setting for the HTTP port is **80**.

Comment

An informational comment for this rule.

Scan

Scan

The virus filter is activated for the server specified in this rule.

No Scan

The virus filter is deactivated for the server specified in this rule.

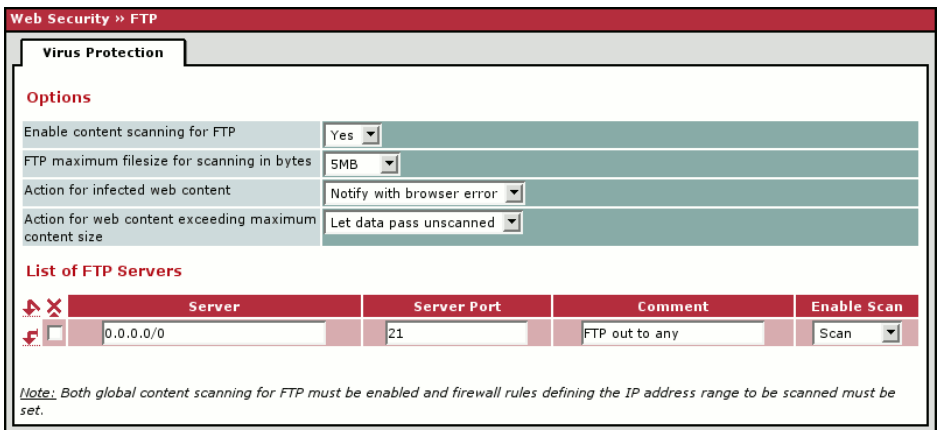
6.7.2 Web Security → FTP

Requirements:

The following requirements must be fulfilled for the use of the virus filter:

- Anti-virus license has been installed. Instructions on how to request and install a license can be found under the section “Management → Update” on page 54.
- Access to an update server with the current versions of the virus signatures (see section “Management → Update” on page 54).

Virus Protection


Web Security » FTP
Virus Protection
Options
Enable content scanning for FTP
Yes
FTP maximum filesize for scanning in bytes
5MB
Action for infected web content
Notify with browser error
Action for web content exceeding maximum content size
Let data pass unscanned
List of FTP Servers
Server
Server Port
Comment
Enable Scan
0.0.0.0/0
21
FTP out to any
Scan
Note: Both global content scanning for FTP must be enabled and firewall rules defining the IP address range to be scanned must be set.

The FTP protocol is used for up- and download of files.

☞ The transferred file will only passed on after it has been loaded completely and checked. Consequently, user software may react less quickly when downloading larger files or whenever the download speeds are slow.

☞ To check the anti-virus protection for FTP, you can download the safe Eicar test virus which is available for test purposes at http://www.eicar.org/anti_virus_test_file.htm.

☞ The mGuard can only be used to secure the FTP-client.

Options

Anti-virus protection for FTP: Yes / No

In the case of **Yes**, files received are scanned for viruses by mGuard if they arrive via FTP connections contained in the list of FTP servers below.

Scanning up to a pre-set volume of:

5 MB. The maximum size of the files to be checked is specified here. Files that are larger are not scanned. Depending on the “When size limit is exceeded” setting, an error message is sent to the client in the event of a file exceeding the size limit, or the system automatically switches to throughput mode.

If the mGuard does not have enough memory to save a file completely or to decompress it, a corresponding error message will be sent to the user's client software and an entry will be written to the anti-virus log. In this case, you have the following options:

- You can try again later to download/upload the file
- You can temporarily deactivate the virus filter for the corresponding server
- You can set the parameter to “Let the data pass unscanned”.

Action for infected content

Notify with browser error

If the virus filter detects a virus in the data transferred between the FTP server and the FTP client, an error message will be sent to the FTP client. The handling of this error message depends on the respective FTP client.

Action for web content exceeding the maximum content size

Let data pass unscanned

When this option is selected the virus filter will allow the files, which exceed the filesize set, to pass through unscanned.

⌦ In this case, the data is not checked for viruses!

Block data

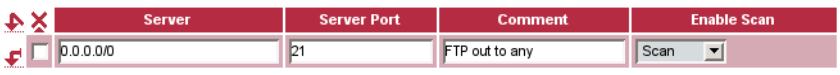
If this option is selected, the system will terminate the download and send an error message to the client software whenever the content exceeds the maximum size.

List of FTP Servers

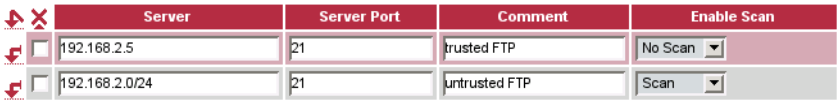
You can select the servers, whose traffic should be filtered, and specify for each IP address whether or not the anti-virus protection should be activated. It is also possible to enter “trusted” servers.

Examples:

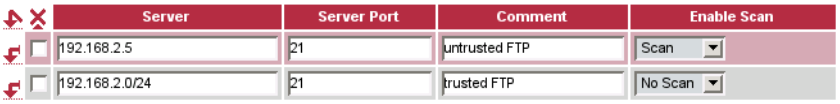
Global activation of the anti-virus protection for FTP:



Scan a subnet and exclude a “trusted” FTP server:



Scan a single “untrusted” FTP server in a subnet:



☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

⌦ To activate the virus filter for FTP connections over a proxy, insert a new row and change the default port 21 to the proxy’s port.

⌦ The set of rules will be processed from the top down, therefore, the order of the rules is also decisive for the results.

⌦ The virus filter can only handle a limited number of simultaneous connections to mail, HTTP and FTP servers. Exceeding this number will cause further connection attempts to be refused.

⌦ Scanning for viruses may allow outgoing connections which are usually blocked by the firewall rules defined under “Network Security → Packet Filter” and “Network Security → User Firewall”. Please see “Connections scanned for viruses are subject to firewall rules: Yes / No” on page 93 to adjust this behaviour.

You have the following options for the entries:

Server

0.0.0.0/0 means all addresses, i.e. the system will filter the traffic of all FTP servers. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

⌦ Since an attempt to setup a connection is first handled by the proxy, if a nonexistent server is requested (e.g. a bad IP address) the user software will act as though the connection to the server had been established, but no data was sent. If the list contains the exact server addresses, this behavior can be prevented, since the proxy will then only take requests addressed to the servers given in the list.

Server Port

Enter the number of the port for the FTP protocol in this field. The default setting for the FTP port is **21**.

Comment

An informational comment for this rule.

Scan

Scan

The virus filter is activated for the server specified in this rule.

No Scan

The virus filter is deactivated for the server specified in this rule.

6.8 Menu Email Security (not on blade control unit)

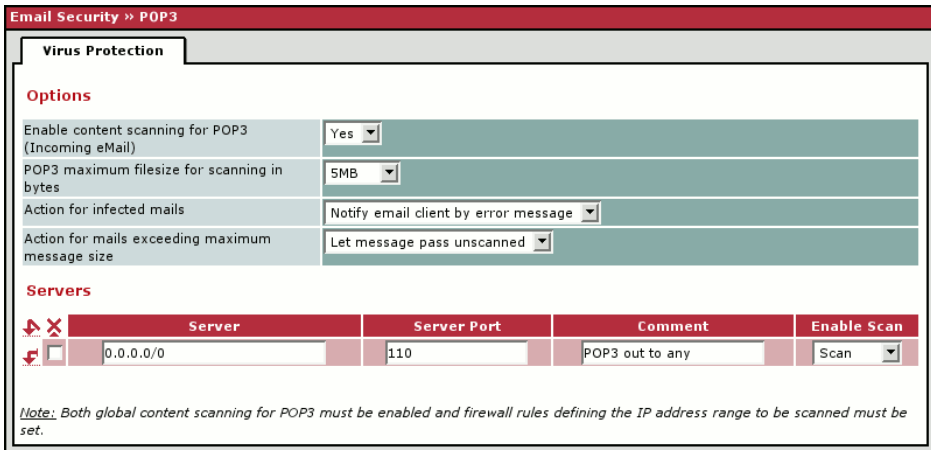
6.8.1 Email Security → POP3

Requirements:

The following requirements must be fulfilled for the use of the virus filter:

- Anti-virus license has been installed. Instructions on how to request and install a license can be found under the section "Management → Update" on page 54.
- Access to an update server with the current versions of the virus signatures (see section "Management → Update" on page 54).

Virus Protection



Your e-mail client uses the POP3 protocol for incoming e-mail.

☞ The virus filter can only check unencrypted data for viruses. Consequently, you should not activate encryption options such as STLS or SSL. Encrypted authentication using AUTH is, however, usable, since the e-mail itself is not encrypted.

Options

Anti-virus protection for POP3 (E-mail pickup): Yes / No

In the case of **Yes**, files received are scanned for viruses by mGuard if they arrive via POP3 connections contained in the list of POP3 servers below.

☞ Tip: When using a POP3 connection, most e-mail clients will pick up all of the e-mails during a single connection. In this case, the new settings will first take effect after the last e-mail is collected from the server during the current connection. Consequently, to change the settings when an e-mail transfer is in process, first cancel the transfer.

POP3 maximum filesize for scanning in bytes

With this parameter, you can set the maximum size of the files to be checked. If this limit is exceeded, the system will - depending on the setting "Action for mails exceeding the maximum message size" - block the e-mail and send an error message back to the e-mail client or it will automatically switch to "Let the message pass unscanned" mode.

If the mGuard does not have enough memory to save a file completely or to decompress it, a corresponding error message will be sent to the user's e-mail client and an entry will be written to the anti-virus log. In this case, you have the following options:

- You can try again later to download the file
- You can temporarily deactivate the virus filter for the corresponding server

- You can set the parameter to “Let the message pass unscanned”.

Please note that - depending on the coding scheme used - the size of the attachment may be larger than the original file.

Action for infected mails

Notify recipient by e-mail:

If the virus filter detects a virus, the recipient will be informed by e-mail.

Notify e-mail client by error message:

If the virus filter detects a virus, the recipient will be informed by an error message sent to the e-mail client.

☞ If the parameter “Delete received messages from server” has been set in the e-mail client software and the “Action for infected mails” has been set to “Notify recipient by e-mail”, the infected e-mail will be deleted on the server, since the e-mail client will assume that the e-mail has been successfully transferred. If you do not wish to have the infected mail deleted (e.g. if you wish to download the infected e-mail in some other manner), only use the option “Notify e-mail client by error message”.

Action for mails exceeding the maximum message size

Let the message pass unscanned

When this option is selected the virus filter will allow the messages, which exceed the filesize set, to pass through unscanned.

☞ In this case, the mail will not be checked for viruses!

Block message

When this option is selected, an error code will be returned to the e-mail client and the e-mail will be blocked.

List of POP3 servers

Indicate which servers’ files should be scanned for viruses. By enabling or disabling the anti-virus function beside each individual entry or server, respectively, you can, for example, set an exception rule for a subsequent comprehensive rule. This allows you to define “trusted” servers – see the example illustrated below.

Examples:

Global activation of the anti-virus protection for POP3:

Server	Server Port	Comment	Enable Scan
0.0.0.0/0	110	POP3 out to any	Scan

Scan a subnet and exclude a “trusted” POP3 server:

Server	Server Port	Comment	Enable Scan
192.168.2.5	110	trusted POP3	No Scan
192.168.2.0/24	110	untrusted POP3	Scan

Scan a single “untrusted” POP3 server in a subnet:

Server	Server Port	Comment	Enable Scan
192.168.2.5	110	untrusted POP3	Scan
192.168.2.0/24	110	trusted POP3	No Scan

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

⌦ The virus filter can only handle a limited number of simultaneous connections to mail, HTTP and FTP servers. Exceeding this number will cause further connection attempts to be refused.
⌦ The set of rules will be processed from the top down, therefore, the order of the rules is also decisive for the results.
⌦ Scanning for viruses may allow outgoing connections which are usually blocked by the firewall rules defined under “Network Security → Packet Filter” and “Network Security → User Firewall”. Please see “Connections scanned for viruses are subject to firewall rules: Yes / No” on page 93 to adjust this behaviour.

You have the following options for the entries:

Server

0.0.0.0/0 means all addresses, i.e. the system will filter the traffic of all POP3 servers. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

⌦ Since an attempt to setup a connection is first handled by the proxy, if a nonexistent server is requested (e.g. a bad IP address) the user software will act as though the connection to the server had been established, but no data was sent. If the list contains the exact server addresses, this behavior can be prevented, since the proxy will then only take requests addressed to the servers given in the list.

Server Port

Enter the number of the port for the POP3 protocol in this field. The default setting for the POP3 port is **110**.

Comment

An informational comment for this rule.

Scan

Scan

The virus filter is activated for the servers specified in this rule.

No Scan

The virus filter is deactivated for the server specified in this rule.

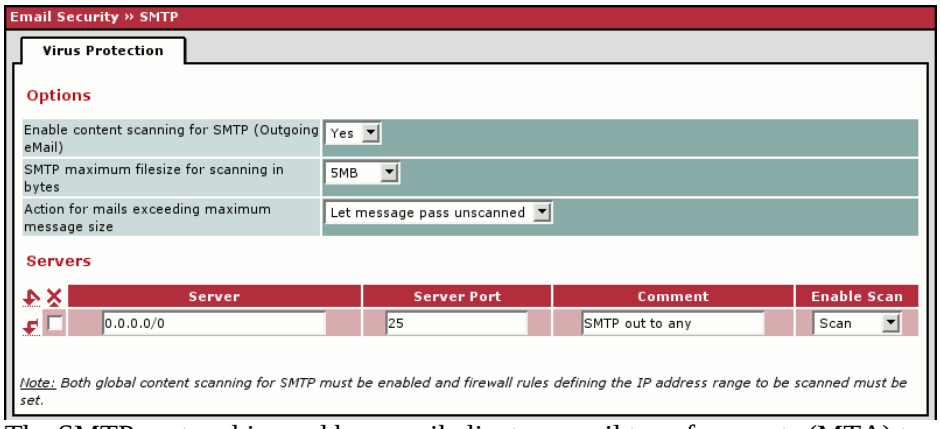
6.8.2 Email Security → SMTP

Requirements:

The following requirements must be fulfilled for the use of the virus filter:

- Anti-virus license has been installed. Instructions on how to request and install a license can be found under the section “Management → Update” on page 54.
- Access to an update server with the current versions of the virus signatures (see section “Management → Update” on page 54).

Virus Protection



The SMTP protocol is used by e-mail clients or mail transfer agents (MTA) to send e-mails.

☞ The virus filter can only check unencrypted data for viruses.

Consequently, you should not activate encryption options such as TLS. If a virus is detected or an error occurs, an e-mail with an error code will be sent to the sender and an entry will be made in the anti-virus log. The intended recipient will receive neither the infected mail nor a message.

Options

Anti-virus protection for SMTP (E-mail transmission): Yes / No

In the case of Yes, files to be sent are scanned for viruses by mGuard if they are to be transmitted via SMTP connections that are specified in the list of SMTP servers below.

Scanning up to a pre-set volume of

5 MB. The maximum size of the files to be checked is specified here. Files that are larger are not scanned. Depending on the “When size limit is exceeded” setting, an error message is sent to the SMTP client and the e-mail is not delivered in the event of a file exceeding the size limit, or the system automatically switches to throughput mode.

If the mGuard does not have enough memory to save a file completely or to decompress it, a corresponding error message will be sent to the user's e-mail client and an entry will be written to the anti-virus log. In this case, you have the following options:

- You can try again later to send the message.
- You can temporarily deactivate the virus filter for the corresponding server
- You can set the parameter to “Let the message pass unscanned”.

Please note that - depending on the coding scheme used - the size of the attachment may be larger than the original file.

Action for mails exceeding the maximum message size

Let the message pass unscanned

When this option is selected the virus filter will allow the messages, which exceed the filesize set, to pass through unscanned.

☞ In this case, the message is not checked for viruses!

Block message

When this option is selected, an error code will be returned to the e-mail client and the e-mail will be blocked.

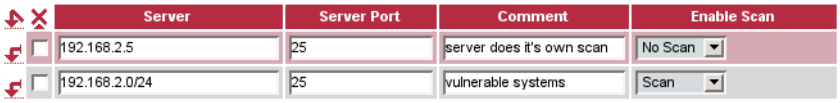
List of SMTP servers

Indicate which server connections should be scanned for viruses.

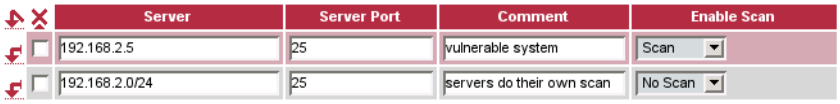
By enabling or disabling the anti-virus function beside each individual entry or server, respectively, you can, for example, set an exception rule for a subsequent comprehensive rule. This allows you to define “trusted” servers – see the example illustrated below

Examples:
Global activation of the anti-virus protection for SMTP:

Scan a subnet and exclude a SMTP server:



Scan traffic to a single SMTP server in a subnet:



☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

- The set of rules will be processed from the top down, therefore, the order of the rules is also decisive for the results.
- The virus filter can only handle a limited number of simultaneous connections to mail, HTTP and FTP servers. Exceeding this number will cause further connection attempts to be refused.
- Scanning for viruses may allow outgoing connections which are usually blocked by the firewall rules defined under “Network Security → Packet Filter” and “Network Security → User Firewall”. Please see “Connections scanned for viruses are subject to firewall rules: Yes / No” on page 93 to adjust this behaviour.

You have the following options for the entries:

Server

0.0.0.0/0 means all addresses, i.e. the system will filter the traffic to all SMTP servers. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

- Since an attempt to setup a connection is first handled by the proxy, if a nonexistent server is requested (e.g. a bad IP address) the user software will act as though the connection to the server had been established, but no data was sent. If the list contains the exact server addresses, this behavior can be prevented, since the proxy will then only take requests addressed to the servers given in the list.

Server Port

Enter the number of the port for the SMTP protocol in this field. The default setting for the SMTP port is **25**.

Comment

An informational comment for this rule.

Scan

Scan

The virus filter is activated for the server specified in this rule.

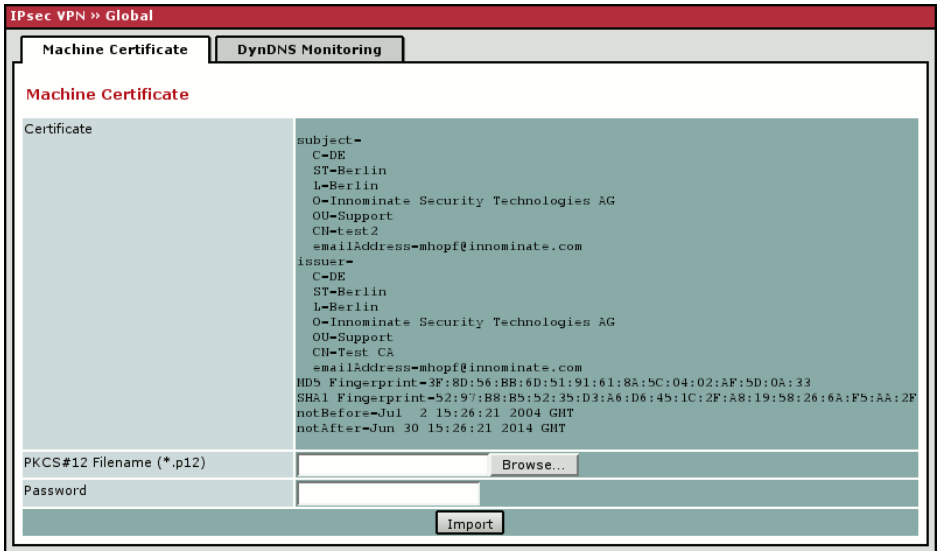
No Scan

The virus filter is deactivated for the server specified in this rule.

6.9 Menu IPsec VPN (not blade controller)

6.9.1 IPsec VPN → Global

Machine Certificate



Machine Certificate

This shows the currently imported X.509 certificate with which the mGuard identifies itself to other VPN gateways. The following information is displayed:

subject	The holder to whom the certificate was issued.
issuer	The certification authority which signed the certificate. C: Country ST: State L: Location (city) O: Organisation OU: Organisation Unit CN: Common Name (hostname)
MD5, SHA1 Fingerprint	Fingerprint of the certificate to compare this with another person, e.g. on the telephone. Windows displays the fingerprint in SHA1 format here.
notBefore, notAfter	Period of time that the certificate is valid. This is ignored by the mGuard, since it doesn't have an integrated realtime clock.

In addition to the information given above, the imported PKCS#12 file (filename extension *.p12 or *.pfx) also contains a public and a private key. The public key will be given in a certificate file (filename extension *.cer or *.pem) to other VPN gateways and is used to verify that this mGuard owns the corresponding private key.
Depending on the remote site, its operator must be supplied with the certificate file in person or via a signed e-mail or if a secure means of communication is not available, you should conclude by comparing the fingerprint shown by the mGuard via a secure means.

Only one PKCS#12 file can be imported into the device.

To import a (new) certificate, proceed as follows:

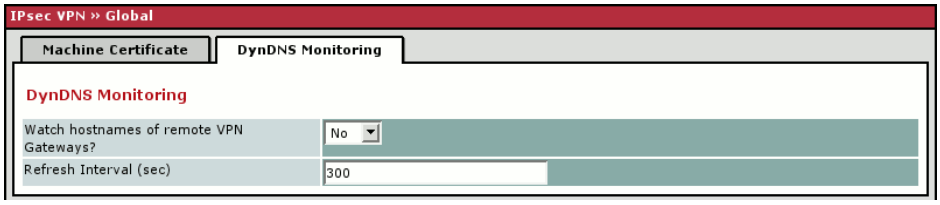
Import a new certificate

Prerequisite:

The PKCS#12 file (filename = *.p12 or *.pfx) is generated and saved on the connected system.

1. Click on **Browse...** to select the file.
2. Enter the password with which the PKCS#12 file's private key is protected in the *Password* field.
3. Click on **Import**.
4. Then click on **OK**.
   After the import is completed, the new certificate will be shown under *Certificate*.

DynDNS Monitoring



For an explanation of DynDNS, see below: Services → DynDNS Registration.

Watch hostnames of remote VPN Gateways? Yes / No

If the mGuard has been given the address of the remote VPN gateway as a hostname (see “Connections” on page 114) and this hostname has been registered with a DynDNS Service, the mGuard can check against the DynDNS at regular intervals whether any changes have occurred. If yes, the VPN connection will be setup to the new IP address.

Refresh Interval (sec)

Standard: 300 (seconds)

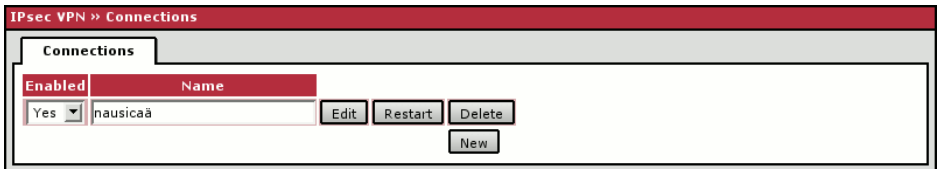
6.9.2 IPsec VPN → Connections

Prerequisites for a VPN connection:

The main prerequisite for a VPN connection is that the IP addresses of the VPN partners are known and reachable.

- In order for an IPsec connection to be setup successfully, the VPN’s remote site must support IPsec with the following configuration:
  – Authentication via Pre-Shared Key (PSK) or X.509 certificate
  – ESP
  – Diffie-Hellman Groups 2 and 5
  – DES, 3DES or AES encryption
  – MD5 or SHA-1 hash algorithms
  – Tunnel or Transport mode
  – Quick Mode
  – Main Mode
  – SA Lifetime (1 second to 24 hours)
  If the system at the remote site is running Windows 2000, the *Microsoft Windows 2000 High Encryption Pack* or at least *Service Pack 2* must be installed.
- If the remote site is behind a NAT router, it must support NAT-T. Or the NAT router must support the IPsec protocol (IPsec/VPN Passthrough). In either case, for technical reasons, only IPsec Tunnel connections are supported.

Connections



Lists the VPN connections that have been set up.

☞ You can activate (Enable = **Yes**) or deactivate (Enable = **No**) each individual connection.

VPN connections - deleting

☞ Click on the **Delete** button next to the entry.
Then click on **OK**.

Configuring a new VPN connection

☞ Click on **New**.
Enter a name for the connection and then click on **Edit.**
Make the necessary or desired settings (see below).
Then click on **OK**.

VPN connections - editing

☞ Click on the **Edit** button next to the entry.
Make the necessary or desired settings (see below).
Then click on **OK**.

⌦ The following URL can be used to start/stop VPN connections indepently from their **Enabled** setting:

`https://`*server*`/nph-vpn.cgi?name=`*connection*`&cmd=(up|down)`

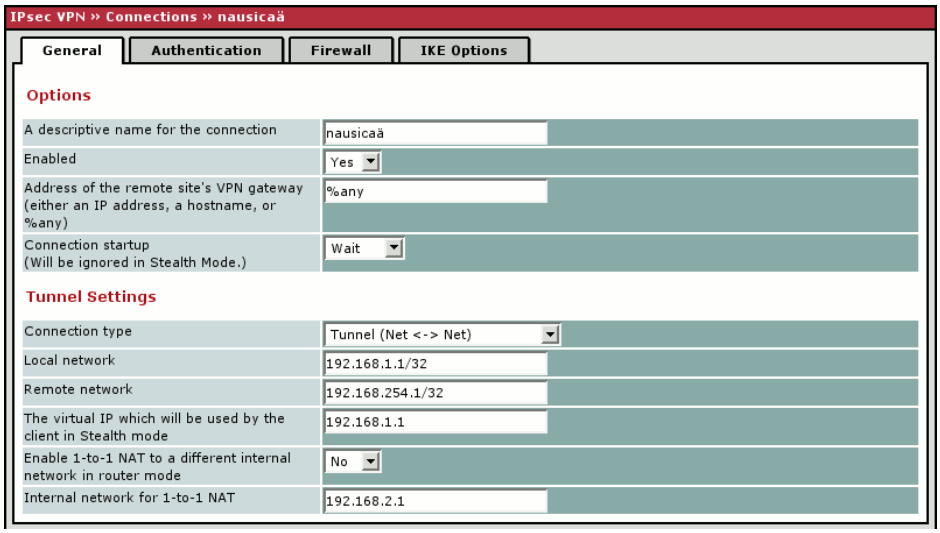
Example:

```
wget https://admin:mGuard@192.168.1.1/nph-vpn.cgi?name=pa-
ris&cmd=up
```

6.9.3 Define a VPN connection

After pressing the **Edit** button, the following page appears

General



Options

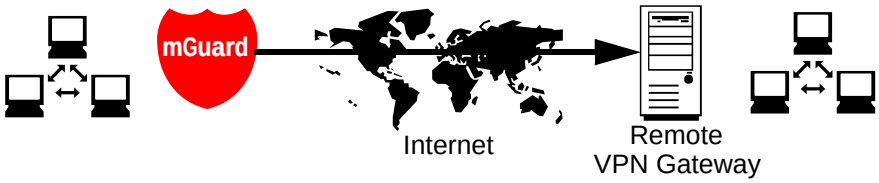
A descriptive name for the connection

You can assign the connection any name you desire.

Enabled

Specify whether the connection should be enabled (= Yes) or not (= No).

Address of the remote site's VPN gateway



The address of the gateway to the private network in which the remote communication partner can be found.

– If you wish to have the mGuard actively initiate and set up the connection to the remote site or if the device is in *Stealth* mode, enter the IP address or the hostname of the remote site here.
– If the remote site's VPN gateway does not have a fixed and known IP address, you can use the DynDNS Service to simulate a fixed and known address. See "DynDNS" on page 82.
– If you want the mGuard to be ready to accept a connection actively initiated and set up by a remote site with any IP address, enter: **%any**
– In this case, the local mGuard can be "called" by a remote site, which has been dynamically assigned its IP address (by the internet service provider), which has an IP address that changes. In this scenario, you may only enter an IP address when this is the fixed and known IP address of the remote "calling" site.

⌦ **%any** can only be used along with the authentication mode using X.509 certificates.

⌦ In case the remote peer is located behind a NAT gateway, **%any** must be used. Otherwise the renegotiation of new connection keys will fail after the connection is established.

Connection startup

There are 2 options:

- Initiate the connection to the remote site
- Wait for the remote site to initiate the connection

Initiate

In this case, the local mGuard sets up the connection to the remote site. The fixed IP address or domain name of the remote site must be entered in the *Address of the remote site's VPN gateway* (see above) field.

Wait

In this case, the local mGuard is ready to accept a connection, which a remote site actively initiates and sets up to the local mGuard. The entry in the *Address of the remote site's VPN gateway* (see above) field may be: **%any**

If the mGuard should only accept a connection initiated by a specific remote site (which has a fixed IP address), you can enter its IP address or hostname just to be on the safe side.

☞ If the mGuard is running in *Stealth* mode, this setting has no effect. In other words, it will be ignored and the connection will be initiated automatically, whenever the mGuard notices that the connection should

be used.

Tunnel Settings

Connection type

You can choose from:

Tunnel (Net[work] ←→ Net[work])

Transport (Host ←→ Host)

Transport (L2TP Microsoft Windows)

Transport (L2TP SSH Sentinel)

Tunnel (Net[work] ←→ Net[work])

This type of connection is not only suitable in every case, but also the most secure. In this mode, the IP datagrams are completely encrypted before they are sent with a new header to the remote site's VPN gateway – the "tunnel end". There the transferred datagrams are decrypted to restore the original datagrams. These are then passed on to the destination system.

Transport (Host ←→ Host)

In this type of connection, the device only encrypts the data of the IP packets. The IP header information remains unencrypted.

Transport (L2TP Microsoft Windows)

If this type of connection is activated, the mGuard will use a transport connection which is compatible with the IPsec/L2TP client available in older Microsoft Windows systems.

If you select this option you should also set *Perfect Forward Secrecy (PFS)* to **No** and enable the L2TP server.

Transport (L2TP SSH Sentinel)

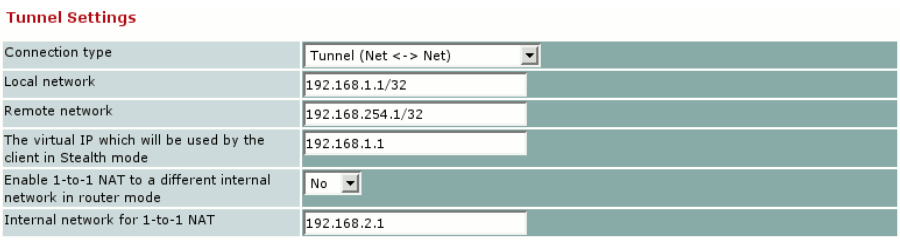
If this type of connection is activated, the mGuard will use a transport connection which is compatible with the IPsec/L2TP client available in recent Microsoft Windows systems and the SSH Sentinel VPN client.

If you select this option you should also set *Perfect Forward Secrecy (PFS)* to **No** (see below) and enable the L2TP server.

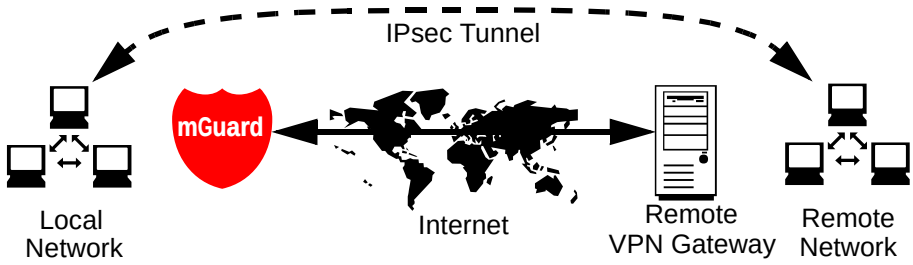
☞ As soon as the IPsec/L2TP connection is started under Windows, a dialog will appear to prompt you to enter your user name and login. You can make any entry that you want in this dialog. Since the X.509 certificate has already provided your authentication, the mGuard will ignore these entries.

Tunnel Settings, with Connection Type Tunnel (Net <-> Net)

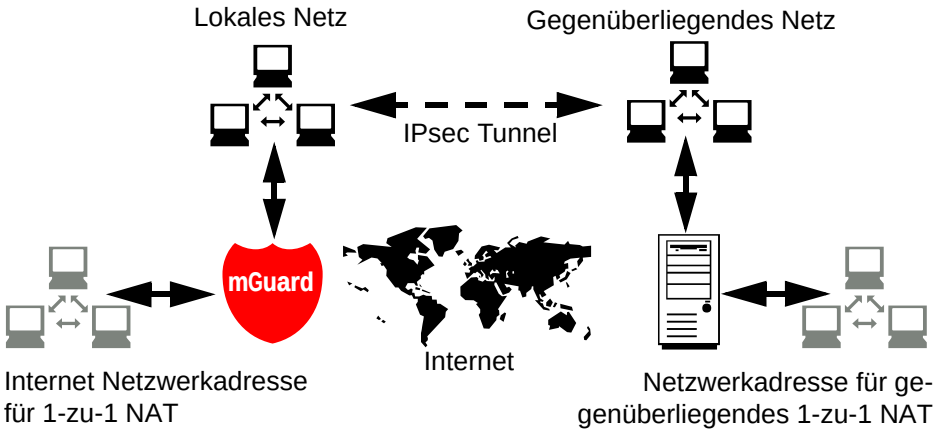
When the *Connection Type* is set to "Tunnel", the following entries appear on the page:



The parameters **Local network address** and **Remote network address** define the networks on both sides of the tunnel which must also match the remote VPN gateway's tunnel configuration:



With 1-to-1-NAT it is furthermore possible to change the effectively used network addresses, independently from the tunnel settings as agreed on with the remote VPN gateway:



Local network

With this entry, you specify the address of the network or computer which is connected to the local interface of the mGuard.

Enable 1-to-1 NAT of the local network to an internal network *(only Router-Mode)*

Rewrite the local network as defined in *Local network* to an actually existing local network.

The default setting is **No**.

Internal network address for local 1-to-1 NAT *(only when **Yes was chosen above**)*

The actually existing local network address from which local systems address the VPN tunnel.

The network mask is taken from the field *Local network*.

Remote network

With this entry, you specify the address of the network or computer which is available behind the remote VPN gateway.

☞ The network 0.0.0.0/0 specifies a *default route over the VPN*.
This means that all traffic for which there is no other VPN tunnel or route will be routed through this VPN tunnel.
A default route over VPN should only be specified for a single tunnel and is not available in *Stealth* mode.

Enable 1-to-1 NAT of the remote network to a different network *(only*

Router Mode)

Rewrite a remote network which is addressed by the systems in the local network to the network address as defined in *Remote network*.

The default setting is **No**.

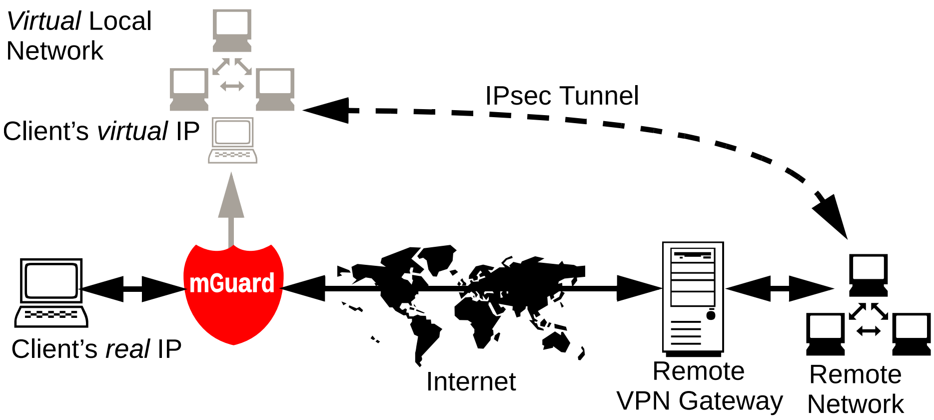
Network address for remote 1-to-1 NAT *(only when* ***Yes*** *was chosen above)*

The remote network address which is actually addressed by the local systems.

The network mask is taken from the field *Remote network*.

⌧ In case the *Remote network* or the *Network address for remote 1-to-1 NAT* are within one of the networks directly connected to the mGuards LAN port, then the mGuard will additionally answer ARP requests for such IP addresses. This enabled access to a remote VPN using local IP addresses without actually changing the routing configuration of locally connected clients.

The virtual IP which will be used by the client in stealth mode



In *Stealth* mode the VPN's local network is simulated by the mGuard. Inside this *virtual* network, the client will be known under a *virtual IP*.

⌧ This entry is only required in *Stealth* mode.

Activate 1-to-1 NAT in another internal network in Router mode: Yes / No

Transcribe the local network defined in the VPN tunnel to a local network available for the local (LAN) Ethernet port.

An explanation for 1-to-1 NAT can be found under "Network Address Translation/IP Masquerading" on page 93.

Internal network for 1-to-1 NAT

The network address for the local (LAN) Ethernet port. The net mask is taken over from the *local network* field.

Authentication

Authentication method

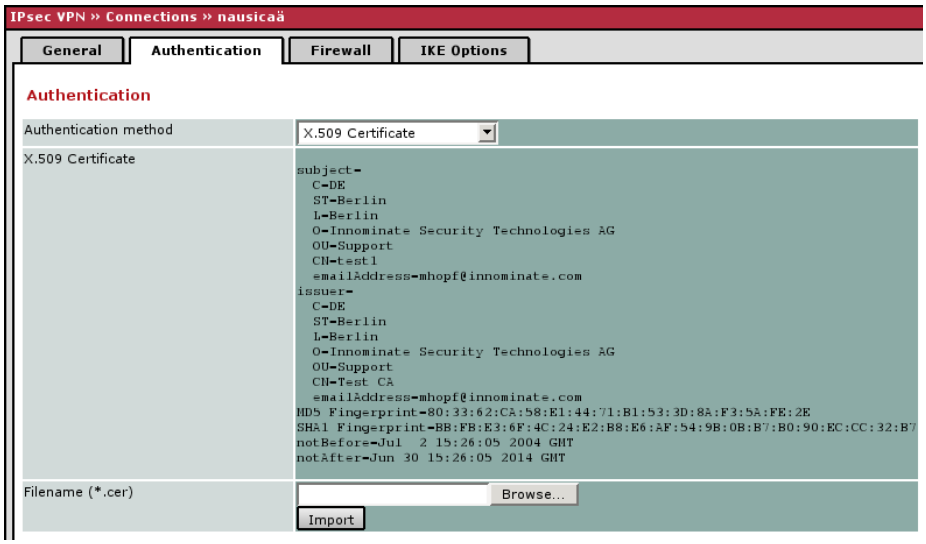
There are 2 options:

– X.509 Certificate

– Pre-Shared Key

Depending on which option you have chosen, the page will present you different possibilities for adjustments:

Authentication method: X.509 Certificate



These methods are supported by most of the newer IPsec implementations. In this case, the mGuard uses the public key of the remote site (filename *.cer or *.pem) to encrypt the authentication datagram before it sends it to the remote site, the “tunnel end”. (You must have received this *.cer or *.pem file from the operator at the remote site – perhaps on a floppy disc or attached to an e-mail).

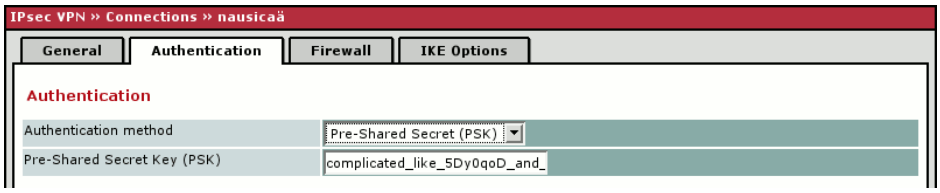
To make this public key available to the mGuard, proceed as follows:

Prerequisite:

The *.cer or *.pem file must have been saved on the configuration system.

1. Click on **Browse...** and select the file.
2. Click on **Import**.
   After the import, the contents of the new certificate will be displayed. An explanation of the information displayed can be found in the chapter “Machine Certificate” on page 113.

Authentication method: Pre-Shared Secret Key (PSK)

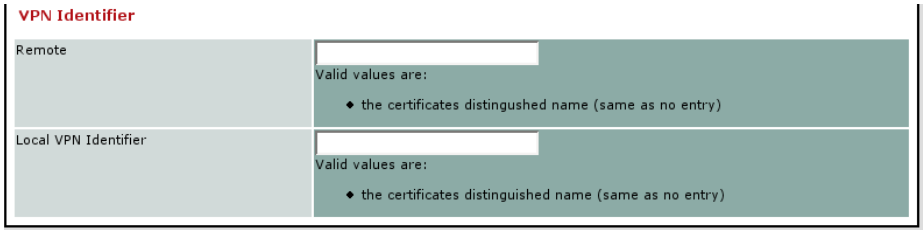


This method is mainly used by older IPsec implementations. In this case both sides of the VPN authenticate each other with the same PSK.

To make the agreed upon key available to the mGuard, enter the agreed upon character string in the *Pre-Shared Secret Key (PSK)* entry field. To achieve security comparable to that of 3DES, the string should consist of about 30 characters selected at random and should include upper and lower case characters and digits.

☞ The *Pre-Shared Secret Key* cannot be used with dynamic (%any) IP addresses; fixed IP addresses or host names are required at both ends.

VPN Identifier


VPN Identifier
Remote
Valid values are:
the certificates distingushed name (same as no entry)
Local VPN Identifier
Valid values are:
the certificates distinguished name (same as no entry)

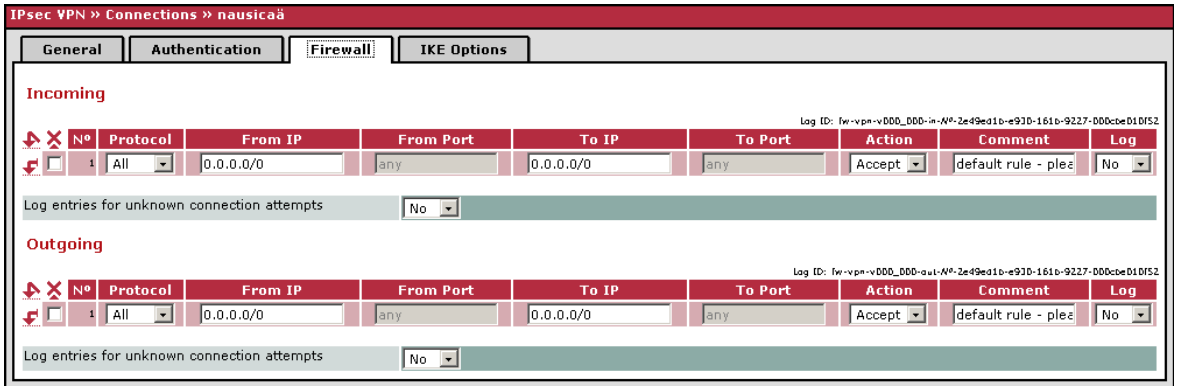
Via the *VPN Identifier*, the VPN gateways can recognize which configurations belong to the same VPN connection.
Valid entries are:
PSK authentication

- empty (the IP address will be used, this is the default)
- an IP Address
- a Hostname prefixed with an '@' character (eg. "@vpn1138.example.com")
- an email address (eg. "piepiorra@example.com")

X.509 authentication

- empty (the certificates distinguished name (DN) will be used, this is the default)
- the certificates distinguished name
- one of the subject alternative names listed in the certificate (when the certificate contains subject alternative names, they will be shown under "Valid values are:" and may be IP addresses, hostnames prefixed with a '@' character or email addresses)

Firewall



Firewall incoming, Firewall outgoing

While the settings made in the *Firewall* menu only affect non-VPN connections (see above under "Incoming Rules" on page 89), these settings affect just the VPN connection defined here. This means: If you have defined multiple VPN connections, you can restrict the outgoing or incoming access individually for each connection. You can have any attempts made to bypass these restrictions logged.

⌦ The VPN Firewall factory settings allow all connections via this VPN connection.
However, the settings for "Network Security → DoS Protection" on page 98 do apply independently for each individual VPN connection.

⌦ If multiple firewall rules are set, they will be searched in the order in which they are listed from top to bottom until a suitable rule is found. This rule will then be applied. If further down in the list there are other rules which would also fit, they will be ignored.

⌦ In stealth mode the real IP address is to be used for the client or left at 0.0.0.0/0, as only one client can be addressed through the tunnel.

☞ Inserting, moving and deleting rows is explained under “Working with tables” on page 43.

As in the previous sections, you have the following options when making the entries:

Protocol

All means: TCP, UDP, ICMP and other IP protocols.

From IP/To IP

0.0.0.0/0 means all addresses. To enter an address space, use the CIDR notation – see “CIDR (Classless InterDomain Routing)” on page 135.

From Port/To Port

(This is only evaluated by the TCP and UDP protocols)

any means each and every port.

startport:endport (e.g. 110:120) defines a range of ports.

You can specify individual ports by giving either their port number or the corresponding service name: (e.g. 110 for pop3 or pop3 for 110).

Action

Accept means that the data packets should be passed through.

Reject means that the data packets should be rejected so that the sender is informed that the data packets have been rejected. (In *Stealth* mode, Reject has the same effect as Drop.)

Drop means that the data packets should not be passed through. The data packets will be discarded so that the sender will not be informed as to what happened to them.

Comment

An informational comment for this rule.

Log

You can specify - for each individual firewall rule - whether the use of the rule

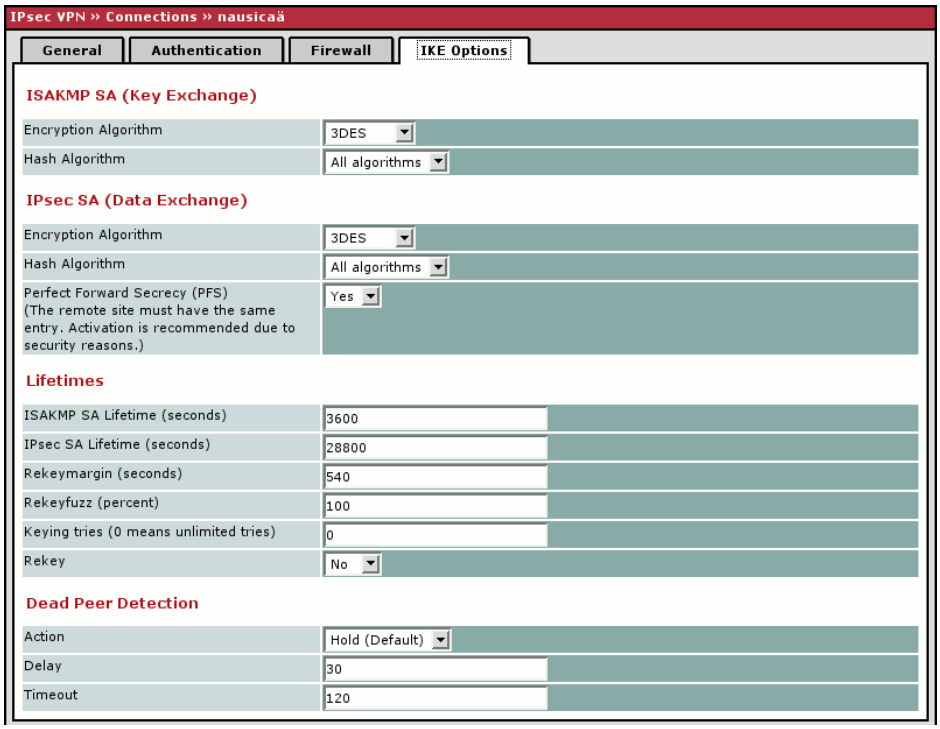
☞ should be logged by setting - *Log* to **Yes**

☞ or not by setting - *Log* to **No** (factory setting).

Log entries for unknown connection attempts

If this is set to Yes, all attempts to establish a connection, which were not covered by the rules defined above, will be logged.

IKE Options



ISAKMP SA (Key Exchange)

Encryption algorithm

☞ Together with the administrator at the remote site, decide on which encryption technique should be used.

3DES-168 is the most commonly used algorithm and is therefore the default (factory) setting.

Basically the following applies: The greater the number of bits used by an encryption algorithm - specified by the appended number -, the more secure it is. The relatively new AES-256 protocol is therefore considered the most secure, but is not yet widely used.

The longer the key, the longer the time required by the encryption process. This latter point, however, is of no consequence for the mGuard, since it uses a hardware-based encryption technique. However, this aspect may be of significance for the remote site.

The algorithm designated as “Null” performs no encryption.

Hash Algorithm

Leave this setting on *All algorithms*. With this setting, it is does not matter whether the remote site uses MD5 or SHA-1.

IPsec SA (Data Exchange)

In contrast to *ISAKMP SA (Key Exchange)* (see above), this setting determines the method used for the exchange of data. This may be different from the Key Exchange but need not be.

Encryption Algorithm

See above

Hash Algorithm

See above

Perfect Forward Secrecy (PFS)

This method is used to increase the security of the data transfer. In IPsec, the key used for the data exchange is changed at certain intervals. In the case of

PFS, a new random number is negotiated with the remote site instead of deriving it from a previously agreed on random number.

☞ Do not set this to **Yes**, unless the remote site also supports PFS.

If you select the connection type *Transport (L2TP Microsoft Windows)*, set *Perfect Forward Secrecy (PFS)* to **No**.

Lifetimes

The keys of an IPsec connection will be renegotiated at certain intervals to increase the costs of an attack at the IPsec connection.

ISAKMP SA Lifetime

The lifetime of the ISAKMP SA keys in seconds.

The factory default is 3600 seconds (1 hour). The allowed maximum is 86400 seconds (24 hours).

IPsec SA Lifetime

The lifetime of the IPsec SA keys in seconds.

The factory default is 28800 seconds (8 hours). The allowed maximum is 86400 seconds (24 hours).

Rekeymargin

Minimal time interval before the old key expires during which a new key shall be negotiated. The factory default is 540 seconds (9 minutes).

Rekeyfuzz

Maximum in percent by which *Rekeymargin* shall be randomly increased.

This is to lower the load during key exchanges on machines with many VPN connections by serializing them. The factory default is 100 percent.

Keying tries

Number of attempts to negotiate new keys with the remote peer.

The special value 0 means unlimited attempts in case the connection is to be initiated by the mGuard, otherwise it means 5.

Rekey

When set to **Yes**, the mGuard will try to renegotiate keys when they expire.

Dead Peer Detection

When the remote peer supports the Dead Peer Detection (DPD) protocol, both peers can detect whether the connection is still valid or must be renegotiated. Without DPD, the connection must be either restarted manually or is unusable until the initiating site's SAs expire.

Action: Hold / Restart / Delete

The switch determines the action that is to be carried out when DPD has recognised a disruption in the IPsec connection.

In the case of **Hold** (default), an attempt to re-build the IPsec connection is made if it has been declared dead, but only when the locally connected network tries to send data to the receiver.

In the case of **Restart** the connection is re-built immediately.

In the case of **Clear** the connection will be deactivated until IPsec is restarted.

Delay

The length of time in seconds after which DPD Keep Alive queries will be sent to check the availability of the remote peer.

The factory default is 30 seconds.

Timeout

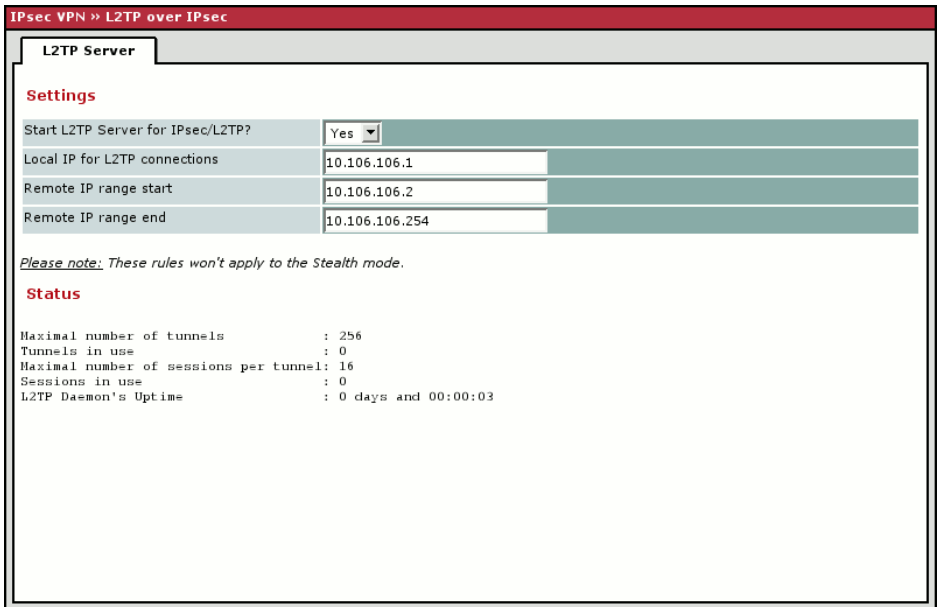
The length of time in seconds after which the remote peer will be declared dead if the Keep Alive queries are not answered.

The factory default is 120 seconds.

6.9.4 IPsec VPN → L2TP over IPsec

Together with VPN connections of connection type *transport*, the L2TP server allows remote peers to connection with IPsec/L2TP to the mGuard.

L2TP Server


IPsec VPN » L2TP over IPsec
L2TP Server
Settings
Start L2TP Server for IPsec/L2TP?
Yes
Local IP for L2TP connections
10.106.106.1
Remote IP range start
10.106.106.2
Remote IP range end
10.106.106.254
Please note: These rules won't apply to the Stealth mode.
Status
Maximal number of tunnels : 256
Tunnels in use : 0
Maximal number of sessions per tunnel: 16
Sessions in use : 0
L2TP Daemon's Uptime : 0 days and 00:00:03

Settings

Start L2TP Server for IPsec/L2TP? Yes / No

If you want to enable IPsec/L2TP connections, set this switch to **Yes**. It is then possible to establish incoming L2TP connections over IPsec, which dynamically assign IP addresses to the clients within the VPN.

Local IP for L2TP connections

With the setting shown in the screenshot above, the mGuard will inform the remote site that the mGuard's address is 10.106.106.1.

Remote IPs for L2TP connections range

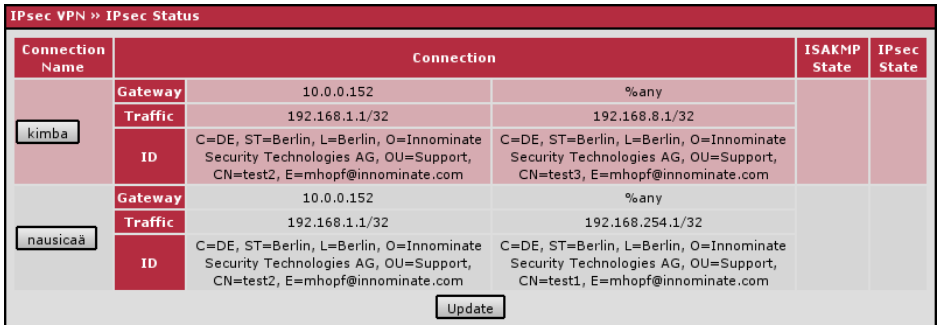
With the settings shown in the screenshot above, the mGuard will assigned IP addresses between 10.106.106.2 and 10.106.106.254 to the remote peers.

Status

Shows information about the L2TP status, when this type of connection has been selected. See "Connections" on page 114.

If this type of connection has not been selected, the screen shown above will be displayed.

6.9.5 IPsec VPN → IPsec Status


IPsec VPN » IPsec Status
Connection Name
Connection
ISAKMP State
IPsec State
kimba
Gateway 10.0.0.152 %any
Traffic 192.168.1.1/32 192.168.8.1/32
ID C=DE, ST=Berlin, L=Berlin, O=Innominate Security Technologies AG, OU=Support, CN=test2, E=mhopf@innominate.com C=DE, ST=Berlin, L=Berlin, O=Innominate Security Technologies AG, OU=Support, CN=test3, E=mhopf@innominate.com
nausicaä
Gateway 10.0.0.152 %any
Traffic 192.168.1.1/32 192.168.254.1/32
ID C=DE, ST=Berlin, L=Berlin, O=Innominate Security Technologies AG, OU=Support, CN=test2, E=mhopf@innominate.com C=DE, ST=Berlin, L=Berlin, O=Innominate Security Technologies AG, OU=Support, CN=test1, E=mhopf@innominate.com
Update

Shows the status of the IPsec connections.

The names of the VPN connections are listed on the left. On the right, you will find the current status of each connection.

GATEWAY
shows the IP addresses of the communicating VPN gateways

TRAFFIC
identifies the systems or networks which communicate via the VPN gateways.

ID
identifies the Distinguished Name (DN) of an X.509 certificate.

ISAKMP State
ISAKMP State (Internet security association and key management protocol) is given as “established”, if the two VPN gateways involved have established a channel to exchange keys. In this case, they have been able to contact each other and all of the settings made on the configuration page up to and including “ISAKMP SA” were correct.

IPsec State
IPsec State is given as “established” if IPsec encryption is activated when communicating. In this case, the entries made under “IPsec SA” and “Tunnel Settings” were also correct.

In the event of problems, we recommend that you examine the VPN logs of the system to which the connection was setup. The basis for this recommendation is that for reasons of security exhaustive error messages are not returned to the initiating system.

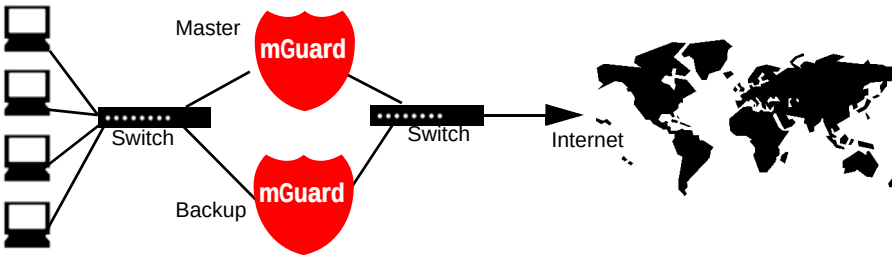
If the display shows:
ISAKMP SA established, IPsec State: WAITING
This indicates that:
the authentication was successful, but the other parameters are not correct: Do the connection types (Tunnel, Transport) match? If Tunnel has been selected, do the network address areas match at both ends?

If the display shows:
IPsec State: IPsec SA established
This indicates that:
the VPN connection has been successfully setup and can be used. If this is not the case, there must be a problem with the remote VPN gateway. In this case, disable and enable the connection to re-establish the connection.

6.10 Menu redundancy

6.10.1 Firewall Redundancy

It is possible to combine two mGuards to a single virtual router with the help of the redundancy ability.



The second mGuard (backup) takes over the function of the first mGuard (master) in the event of an error.

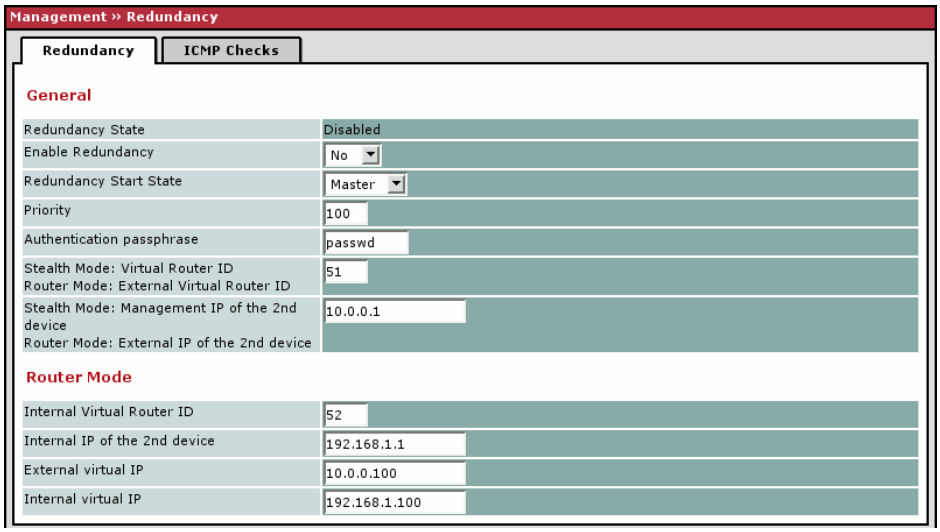
The redundancy feature allows two mGuards to be configured to operate as a virtual router. In case of an error, one mGuard (the *backup*) will take over the functionality of the other mGuard (previously working as the *master*). Additionally, the state of the stateful firewall is synchronized between both mGuards so that, in case of a takeover, current connections will not be interrupted.

- Prerequisite: Both mGuards must be configured accordingly. The firewall configuration should be identical to avoid problems after a switch-over.
- Redundancy can only be used in router mode, static stealth mode with management IP or multi stealth mode.
- The mGuards operating as virtual router must not be used as a VPN gateway.
- Devices connected to the internal network of the virtual router configuration must be configured to use the mGuard's internal virtual IP as the default gateway.

The following features are supported by the virtual router configuration:

- Incoming/Outgoing firewall rules
- NAT (IP-Masquerading, i.e. traffic is NATed to the external virtual IP)
- 1to1 NAT
- Port forwarding (use the external virtual IP as *Incoming on IP*)
- MAC-Filter

Redundancy



General

Redundancy State

Shows the current redundancy state of this mGuard.

Enable Redundancy

Enable/Disable the redundancy feature.

Redundancy Start State

The state of this mGuard during activation of redundancy (master or backup).

Priority

Defines which mGuard will operate as the master.

In case the priorities are different, the mGuard with the higher priority will operate as the master as long as it does not fail.

If both mGuards have the same priority and the backup becomes the master in case of a failure, it will continue to work as the master even when the other mGuard becomes available again.

Values between 1 and 254 are possible.

Authentication passphrase

This password is to protect against misconfiguration among different virtual routers.

The password must be the same on both mGuards. It will be transmitted in clear text and should not be identical with other security relevant passwords.

Stealth Mode: Virtual Router ID
Routermode: External Virtual Router ID

An ID between 1 and 255 which must be the same on both mGuards and identifies the virtual router.

Stealth Mode: Management IP of the 2nd device
Routermode: External IP of the 2nd device

In stealth mode the management IP of the other mGuard, in router mode the external IP of the other mGuard.

Router Mode

The following values need to be set if the mGuards are operated in router mode.

Internal Virtual Router ID

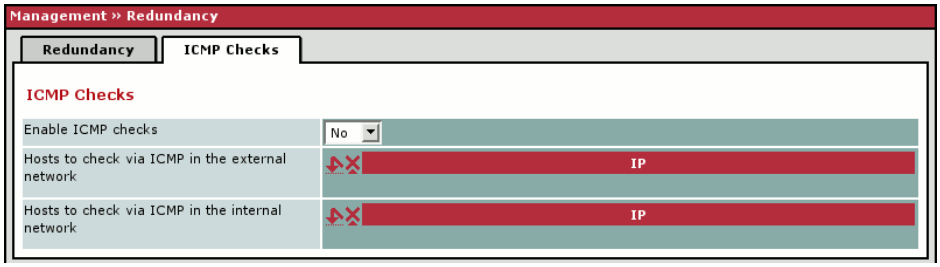
An ID between 1 and 255 which must be the same on both mGuards and identifies the virtual router on the internal interface.

Internal IP of the 2nd device
The internal IP of the other mGuard.

External virtual IP
IP of the virtual router on the external interface (WAN).

Internal virtual IP
IP of the virtual router on the internal interface (LAN). Clients inside the internal network should use this IP as their default gateway.

ICMP Checks



ICMP checks provide an additional way to monitor the network connections between mGuards working as a virtual router.
If one of the two direct Ethernet connections that exist between the LAN ports of the two mGuards and between their WAN ports fails, the backup becomes the master. The Virtual Router Redundancy Protocol (VRRP) utilised by the Guard can't, however, inform the master of this while it is still operating.
With ICMP checks (ICMP ping), the master can check its connections to the bakkup and deactivate itself in case its internal or external connections to the backup failed.

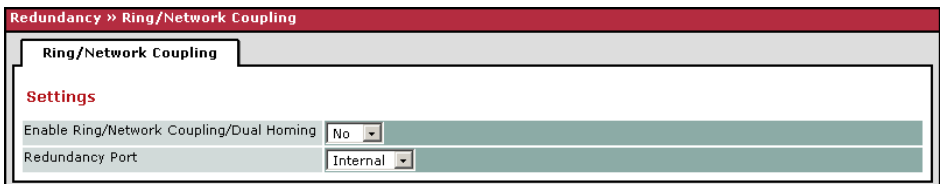
Enable ICMP Checks
The master mGuard will check the connection to the backup mGuard using the ICMP ping protocol.
In case the backup mGuard can not be reached, the *Hosts to check via ICMP in the external/internal network* will be tried. If these checks fail as well, the master mGuard will deactivate itself.

Hosts to check via ICMP in the external network
Hosts in the external network to be checked. The hosts have to be able to answer to the ICMP echo requests.

Hosts to check via ICMP in the internal network
Hosts in the internal network to be checked.The hosts have to be able to answer to the ICMP echo requests.

6.10.2 Ring / Network Coupling

Ring / Network Coupling



Settings

Enable Ring/Network Coupling/Dual Homing: Yes / No
When activated, the link status of one ethernet port will be transfered to the other ethernet port whereby interruptions in the network can be traced more easily.

Redundancy Port: Internal / External
Internal: In case the connection on the LAN port goes down/up, the WAN port will be set down/up also.

External: In case the connection on the WAN port goes down/up, the LAN port will be set down/up also.

6.11 Menu Logging

The term ‘logging’ is understood to mean the recording of event messages, e.g., about settings that have been set, about firewall rules taking effect, about errors, etc.

Log entries are recorded in different categories and can also be displayed according to categories – see “Logging → Browse local logs” on page 131.

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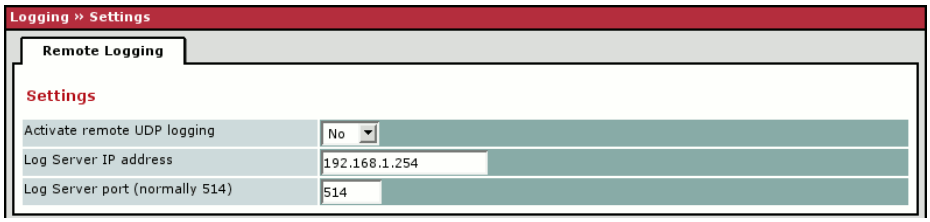
6.11.1 Logging → Settings

Remote Logging



All log entries are recorded in the mGuard's temporary memory (RAM). Once the space for log entries has been filled, the oldest log entries will be overwritten. Furthermore, if the mGuard is switched off, all log entries are deleted.

If you wish to keep a copy of the log, the log entries can be sent to an external system. This is particularly useful if you wish to have centralized administration of the logs.

Settings

Activate remote UDP logging Yes / No

If all log entries should be sent to an external (specified below) log server, set this option to **Yes**.

Log Server IP address

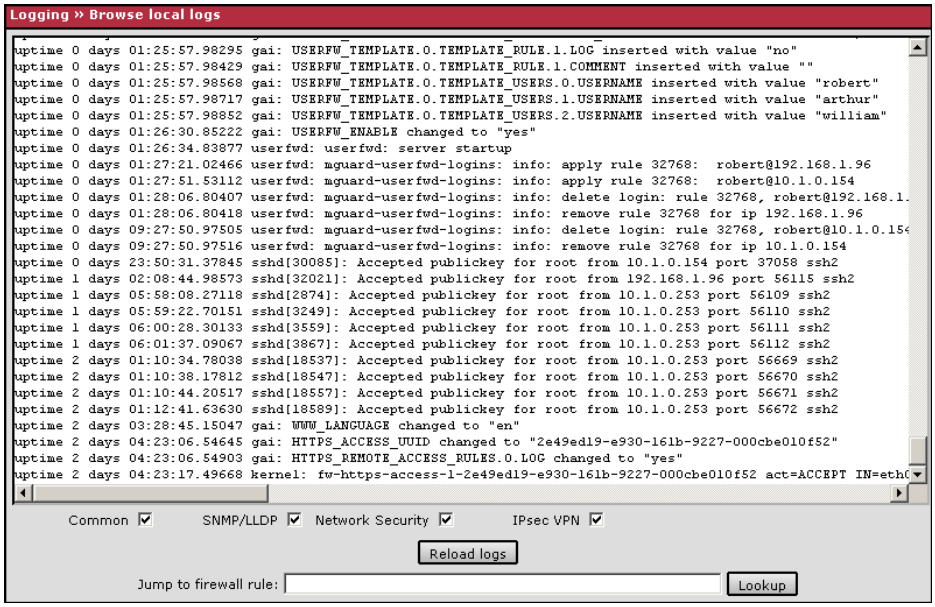
Enter the IP address of the log server to which the log entries should be sent via UDP.

☞ This entry must be an IP address - not a hostname! This function does not support hostnames, since, if it did, it would not be possible to log the loss of a DNS server.

Log Server port

Enter the port of the log server to which the log entries should be sent via UDP. Standard: 514

6.11.2 Logging → Browse local logs


Logging » Browse local logs
uptime 0 days 01:25:57.98295 gai: USERFW_TEMPLATE.0.TEMPLATE_RULE.1.LOG inserted with value "no"
uptime 0 days 01:25:57.98429 gai: USERFW_TEMPLATE.0.TEMPLATE_RULE.1.COMMENT inserted with value ""
uptime 0 days 01:25:57.98568 gai: USERFW_TEMPLATE.0.TEMPLATE_USERS.0.USERNAME inserted with value "robert"
uptime 0 days 01:25:57.98717 gai: USERFW_TEMPLATE.0.TEMPLATE_USERS.1.USERNAME inserted with value "arthur"
uptime 0 days 01:25:57.98852 gai: USERFW_TEMPLATE.0.TEMPLATE_USERS.2.USERNAME inserted with value "william"
uptime 0 days 01:26:30.85222 gai: USERFW_ENABLE changed to "yes"
uptime 0 days 01:26:34.83877 userfwd: userfwd: server startup
uptime 0 days 01:27:21.02466 userfwd: mguard-userfwd-logins: info: apply rule 32768: robert@192.168.1.96
uptime 0 days 01:27:51.53112 userfwd: mguard-userfwd-logins: info: apply rule 32768: robert@10.1.0.154
uptime 0 days 01:28:06.80407 userfwd: mguard-userfwd-logins: info: delete login: rule 32768, robert@192.168.1.
uptime 0 days 01:28:06.80418 userfwd: mguard-userfwd-logins: info: remove rule 32768 for ip 192.168.1.96
uptime 0 days 09:27:50.97505 userfwd: mguard-userfwd-logins: info: delete login: rule 32768, robert@10.1.0.154
uptime 0 days 09:27:50.97516 userfwd: mguard-userfwd-logins: info: remove rule 32768 for ip 10.1.0.154
uptime 0 days 23:50:31.37845 sshd[30085]: Accepted publickey for root from 10.1.0.154 port 37058 ssh2
uptime 1 days 02:08:44.98573 sshd[32021]: Accepted publickey for root from 192.168.1.96 port 56115 ssh2
uptime 1 days 05:58:08.27118 sshd[2874]: Accepted publickey for root from 10.1.0.253 port 56109 ssh2
uptime 1 days 05:59:22.70151 sshd[3249]: Accepted publickey for root from 10.1.0.253 port 56110 ssh2
uptime 1 days 06:00:28.30133 sshd[3559]: Accepted publickey for root from 10.1.0.253 port 56111 ssh2
uptime 1 days 06:01:37.09067 sshd[3867]: Accepted publickey for root from 10.1.0.253 port 56112 ssh2
uptime 2 days 01:10:34.78038 sshd[18537]: Accepted publickey for root from 10.1.0.253 port 56669 ssh2
uptime 2 days 01:10:38.17812 sshd[18547]: Accepted publickey for root from 10.1.0.253 port 56670 ssh2
uptime 2 days 01:10:44.20517 sshd[18557]: Accepted publickey for root from 10.1.0.253 port 56671 ssh2
uptime 2 days 01:12:41.63630 sshd[18589]: Accepted publickey for root from 10.1.0.253 port 56672 ssh2
uptime 2 days 03:28:45.15047 gai: WWW_LANGUAGE changed to "en"
uptime 2 days 04:23:06.54645 gai: HTTPS_ACCESS_UUID changed to "2e49ed19-e930-161b-9227-000cbe010f52"
uptime 2 days 04:23:06.54903 gai: HTTPS_REMOTE_ACCESS_RULES.0.LOG changed to "yes"
uptime 2 days 04:23:17.49668 kernel: fw-https-access-1-2e49ed19-e930-161b-9227-000cbe010f52 act=ACCEPT IN=eth0
Common
SNMP/LLDP
Network Security
IPsec VPN
Reload logs
Jump to firewall rule:
Lookup

Depending on which mGuard functions were active, the corresponding checkboxes for filtering entries according to category are displayed below the log entries. Enable the checkbox(es) for the desired category(ies) and click the **Reload logs** button to display one or more categories

Common

All log entries which are not related to the other categories appear here.

Network Security

When logging of firewall events was chosen during the definition of firewall rules (Log = yes), then these logged events are shown here.

Log ID and number for tracing errors

Log entries that refer to the firewall rules listed below have a log ID and a number. Using the log ID and number, it is possible to trace the firewall rule that the corresponding log entry refers to and that led to the event in question.

Firewall rules and their log ID

- Packet filters:
  Network security → Packet filters → Incoming rules / Outgoing rules menu
  Log ID: fw-incoming or **fw-outgoing, respectively**
- Firewall rules for VPN connections:
  IPsec VPN → Connections → Firewall incoming / outgoing menu
  Log ID: **`vpn-fw-in`** or **`vpn-fw-out`**, respectively
- Firewall rules for web access through mGuard via HTTPS: Administration → Web settings → Access menu
  Log ID: **`fw-https-access`**
- Firewall rules for web access through mGuard via SNMP: Administration → SNMP → Query menu
  Log ID: **`fw-snmp-access`**
- Firewall rules for SSH remote access to the mGuard:
  Administration → System settings → Shell access menu
  Log ID: **`fw-ssh-access`**
- Firewall rules for the user firewall:
  Network security → User firewall → Firewall rules menu
  Log ID: **`ufw-`**

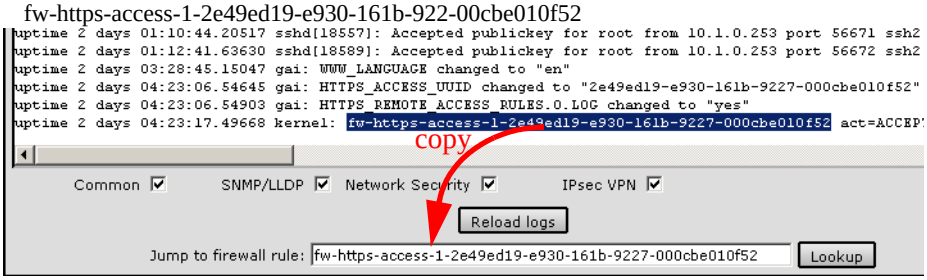
- Rules for NAT, port forwarding
  Network security → NAT → Port forwarding menu
  Log ID: **fw-portforwarding**

Searching for firewall rules on the basis of a network security log

If the **Network security** checkbox is enabled, the **Lookup** search field is displayed below the **Reload Logs** button so that the relevant log entries can be displayed.

Proceed as follows if you want to trace the firewall rule that a log entry in the *network security* category references and that resulted in the relevant event:

1. Mark the section that contains the log ID and number in the relevant log entry, for example:
   fw-https-access-1-2e49ed19-e930-161b-922-00cbe010f52


uptime 2 days 01:10:44.20517 sshd[18557]: Accepted publickey for root from 10.1.0.253 port 56671 ssh2
uptime 2 days 01:12:41.63630 sshd[18589]: Accepted publickey for root from 10.1.0.253 port 56672 ssh2
uptime 2 days 03:28:45.15047 gai: WWW_LANGUAGE changed to "en"
uptime 2 days 04:23:06.54645 gai: HTTPS_ACCESS_UUID changed to "2e49ed19-e930-161b-9227-000cbe010f52"
uptime 2 days 04:23:06.54903 gai: HTTPS_REMOTE_ACCESS_RULES.0.LOG changed to "yes"
uptime 2 days 04:23:17.49668 kernel: fw-https-access-1-2e49ed19-e930-161b-9227-000cbe010f52 act=ACCEP
copy
Common
SNMP/LLDP
Network Security
IPsec VPN
Reload logs
Jump to firewall rule:
fw-https-access-1-2e49ed19-e930-161b-9227-000cbe010f52
Lookup

2. Copy this section into the **Jump to firewall rule** field via the clipboard.
3. Click the **Lookup** button.
   Result:
   The configuration page containing the firewall rule that the log entry refers to is displayed.

Blade

In addition to the error messages, the following messages are output on the blade controller:
(The areas enclosed by < and > are replaced by the respective data in the log entries.)

General messages:

```
blade daemon "<version>" starting ...
Blade[<bladenr>] online
Blade[<bladenr>] is mute
Blade[<bladenr>] not running
Reading timestamp from blade[<bladenr>]
```

When activating a configuration profile on a blade:

```
Push configuration to blade[<bladenr>]
reconfiguration of blade[<bladenr>] returned <returncode>
blade[<bladenr>] # <text>
```

When retrieving a configuration profile from blade:

```
Pull configuration from blade[<bladenr>]
Pull configuration from blade[<bladenr>] returned <returncode>
```

AntiVirus

The Anti-Virus Log contains the following messages from the virus filter:

- The names of any viruses found together with the following information: name of the file and (in the case of an e-mail) the sender, date and subject.
- Warnings sent whenever the system has passed a file through unscanned

because it was larger than the maximum file size.
- Startup and shutdown of the virus filter programs.
- Error messages from the scan-Engine and the virus filter.

Error Messages:

Virus Detection
A virus has been detected. The error message includes the name of the virus, the sender of the e-mail, the date sent and the name of the infected file or the name of the compressed archive file and the infected portion of this archive.
An example of a virus message:

```
mGuard detected a virus. The mail could not be delivered.
found Virus Email-Worm.Win32.NetSky.q /[From
sick@example.com][Date Fri, 13 Aug 2004 11:33:53++0200]/
about_you.zip/document.txt.exe
[000012a7.00000077.00000000]
Message Details:
From: sick@example.com
Subject: Private document
Date: Fri, 13 Aug 2004 11:33:53 +0200
```

Exceeded maximum filesize
The maximum filesize set for this protocol was exceeded.
To transfer the file anyway, you can deactivate the virus filter either for the corresponding server for the course of the download or globally. Alternatively, you can set the “Action for ...exceeding the maximum message size” parameter to “Let the message/data pass unscanned” for the respective protocol.

⌦ In either case, the transferred file will not be scanned for viruses.

Temporary Virus Scanner Failure
A temporary error occurred while trying to scan a file. It is possible that the problem will be cleared if you repeat the transfer again at a later time or if you update the virus signature file.
Possible causes:
- The scan-engine cannot process the file.
- The mGuard does not have enough memory available to decompress the file.
- Internal error in the scan-engine.

Exceptional Virus Scanner Failure
A problem has occurred in the communication with the scan-engine. For more details, please see the anti-virus log.
Possible causes:
- The information entered for the update server is faulty and the signature update has failed (see the “Anti-Virus >Database Update” menu).
- Invalid virus filter license.
- Damaged or faulty update of the virus signature file.

Update running
There is currently no anti-virus database installed, and the download of the current database has been started. You can follow the progress of the download in the anti-virus update log.

DHCP Server/Relay

Messages from services defined under “Network > DHCP”.

Anti-Virus Update

The update log contains notifications regarding the start and progress of the update process for the virus signature files.

SNMP/LLDP

Messages from services defined under “Management > SNMP”.

IPsec VPN

Lists all VPN events.

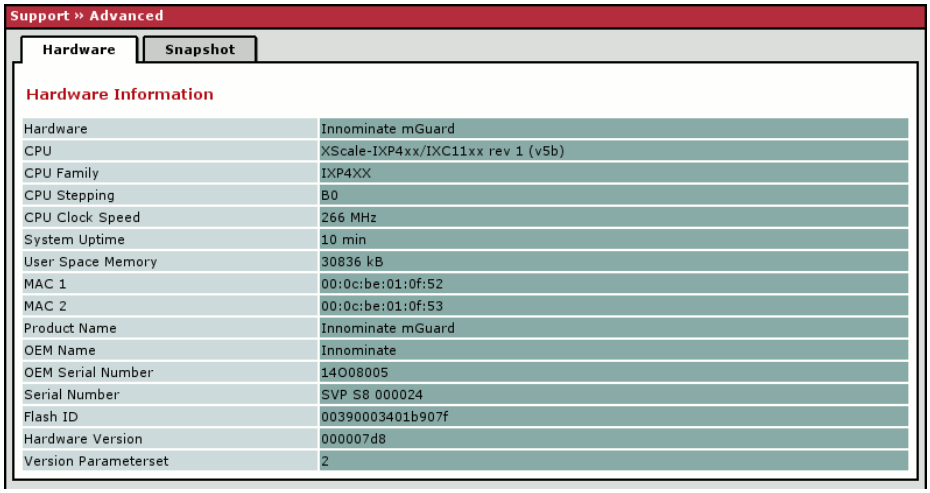
The format corresponds to the standard Linux format.

It offers special evaluation programs that present information from the logged data in a more readable format.

6.12 Menu Support

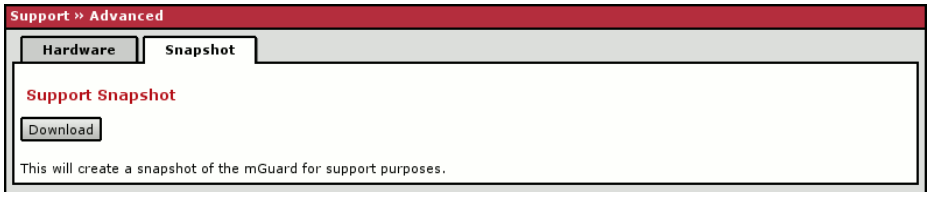
6.12.1 Support → Advanced

Hardware


Support » Advanced
Hardware
Snapshot
Hardware Information
Hardware | Innominate mGuard
CPU | XScale-IXP4xx/IXC11xx rev 1 (v5b)
CPU Family | IXP4XX
CPU Stepping | B0
CPU Clock Speed | 266 MHz
System Uptime | 10 min
User Space Memory | 30836 kB
MAC 1 | 00:0c:be:01:0f:52
MAC 2 | 00:0c:be:01:0f:53
Product Name | Innominate mGuard
OEM Name | Innominate
OEM Serial Number | 14O08005
Serial Number | SVP S8 000024
Flash ID | 00390003401b907f
Hardware Version | 000007d8
Version Parameterset | 2

This page lists the hardware properties of the mGuard.

Snapshot



This function is intended to provide the support with the necessary diagnostic information.

This function prepares a compressed file (in tar format) containing all of the current configuration settings and log entries, which could be relevant to the diagnosis of errors. (This file does not contain any private information such as the private machine certificate or the passwords.)

To take a snapshot, proceed as follows:

1. Click on **Download**.
2. Save the file under the name *snapshot.tar.gz*

Please make the file available to the support, if requested.

6.13 CIDR (Classless InterDomain Routing)

IP netmasks and CIDR are notations, which define an address space containing multiple IP addresses. In this case, an address space in which the addresses follow one another sequentially is treated as a network.

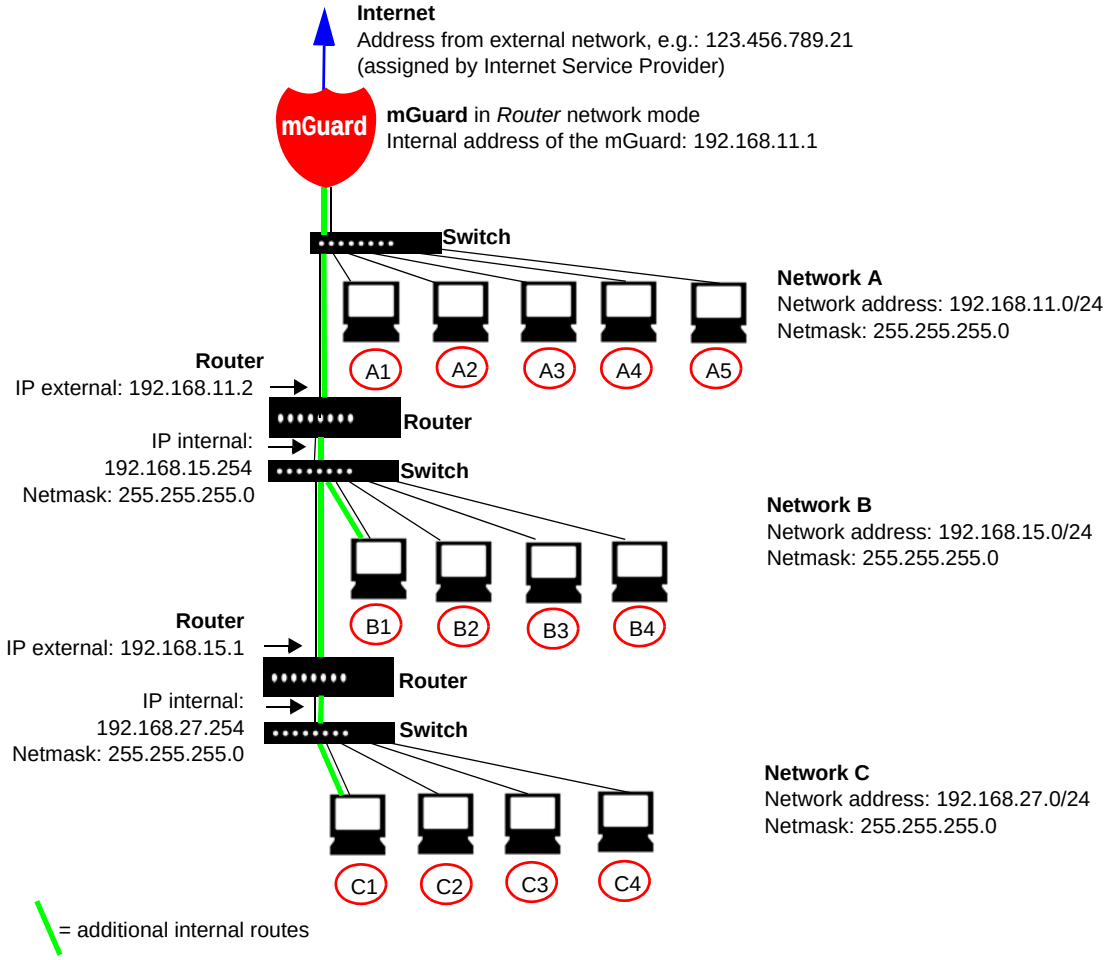
To define a range of IP addresses for the mGuard e.g. when configuring the firewall, it may be necessary to use the CIDR notation to specify the address space. The following table presents the IP netmask on the left and the corresponding CIDR notation on the right.

IP-Netmask	binary				CIDR
255.255.255.255	11111111	11111111	11111111	11111111	32
255.255.255.254	11111111	11111111	11111111	11111110	31
255.255.255.252	11111111	11111111	11111111	11111100	30
255.255.255.248	11111111	11111111	11111111	11111000	29
255.255.255.240	11111111	11111111	11111111	11110000	28
255.255.255.224	11111111	11111111	11111111	11100000	27
255.255.255.192	11111111	11111111	11111111	11000000	26
255.255.255.128	11111111	11111111	11111111	10000000	25
255.255.255.0	11111111	11111111	11111111	00000000	24
255.255.254.0	11111111	11111111	11111110	00000000	23
255.255.252.0	11111111	11111111	11111100	00000000	22
255.255.248.0	11111111	11111111	11111000	00000000	21
255.255.240.0	11111111	11111111	11110000	00000000	20
255.255.224.0	11111111	11111111	11100000	00000000	19
255.255.192.0	11111111	11111111	11000000	00000000	18
255.255.128.0	11111111	11111111	10000000	00000000	17
255.255.0.0	11111111	11111111	00000000	00000000	16
255.254.0.0	11111111	11111110	00000000	00000000	15
255.252.0.0	11111111	11111100	00000000	00000000	14
255.248.0.0	11111111	11111000	00000000	00000000	13
255.240.0.0	11111111	11110000	00000000	00000000	12
255.224.0.0	11111111	11100000	00000000	00000000	11
255.192.0.0	11111111	11000000	00000000	00000000	10
255.128.0.0	11111111	10000000	00000000	00000000	9
255.0.0.0	11111111	00000000	00000000	00000000	8
254.0.0.0	11111110	00000000	00000000	00000000	7
252.0.0.0	11111100	00000000	00000000	00000000	6
248.0.0.0	11111000	00000000	00000000	00000000	5
240.0.0.0	11110000	00000000	00000000	00000000	4
224.0.0.0	11100000	00000000	00000000	00000000	3
192.0.0.0	11000000	00000000	00000000	00000000	2
128.0.0.0	10000000	00000000	00000000	00000000	1
0.0.0.0	00000000	00000000	00000000	00000000	0

Example: 192.168.1.0 / 255.255.255.0 corresponds to 192.168.1.0/24 in CIDR notation

6.14 Network Example

The following sketch illustrates, how the IP addresses can be distributed in a local network with subnets, which network addresses result and how the details regarding additional internal routes might look.



Network A

System	A1	A2	A3	A4	A5
IP address	192.168.11.3	192.168.11.4	192.168.11.5	192.168.11.6	192.168.11.7
Netmask	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0

Network B

System	B1	B2	B3	B4
IP address	192.168.15.2	192.168.15.3	192.168.15.4	192.168.15.5
Netmask	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0

Network C

System	C1	C2	C3	C4
IP address	192.168.27.1	192.168.27.2	192.168.27.3	192.168.27.4
Netmask	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0

Additional internal routes

Network:
192.168.15.0/24
Gateway
192.168.11.2

Network:
192.168.27.0/24
Gateway
192.168.11.2

7 The Rescue Button – restart, recovery procedure and to flash the firmware

The Rescue Button is used to set the device in one of the following states:

7.1 Performing a Restart

Objectives To restart the device using the configured settings.

Action: Press the **Rescue Button** for ca. 1.5 seconds:

- blade, PCI: until both red LEDs light
- delta: until the *Status* LED stops blinking
- EAGLE: until the *Status* LED and the *Link*-LEDs go off
- smart: until the middle LED lights up in red.

OR

- Disconnect the power briefly.
- mGuard PCI: restart the computer in which the mGuard PCI card is installed

7.2 Performing a Recovery

Objectives It is not possible to access the mGuard and the network configurations is to be set to factory defaults.
All mGuard versions, except the mGuard delta and blade controller, will be switched to Stealth mode with the IP address 1.1.1.1
The mGuard delta and the mGuard blade controller will be switched to Router mode with the IP address 192.168.1.1

Additionaly the MAU management for the ethernet interfaces will be switched on and HTTPS will be allowed on the local ethernet interface (LAN).

⌦ The passwords and the settings configured for VPN connections and the firewall are retained.

Possible reasons for starting the Recovery procedure:
The mGuard is in Router or PPPoE mode and
– the mGuard's IP address has been changed from the default setting and
– you don't know the device's current IP address.

Action:

1. Press the **Rescue Button** slowly 6 times (once per second).
2. 2. After about two seconds, the mGuard will respond:

- blade, PCI
  - On success the LAN LED lights green
  - On failure the WAN LED lights red
- delta
  - On success the Status LED lights green
  - On failure the Status LED stays off
- EAGLE
  - On success the STATUS LED lights yellow
  - On failure the FAULT LED lights red
- smart
  - On success the middle LED lights green
  - On failure the middle LED lights red

3. Press the **Rescue Button** slowly 6 times again.
4. On success the device will perform a restart and switch to *Stealth* mode. It can then once again be accessed at the following address: **https://1.1.1.1/**
   The mGuard delta and the mGuard blade Control Unit will be switched to Router-Mode and will be accessible at 192.168.1.1 at the internal interface

7.3 Flashing the firmware

Objectives To reload the mGuard's complete firmware.

⌦ **All of the configured settings will be deleted.** The mGuard will be restored to the factory (default) settings.

Possible reasons for flashing the firmware:

- The Administrator and Root password have been lost.

Action: Proceed as follows:

⌦ **Do not interrupt the power supply during the flashing procedure. Otherwise the device could be damaged and may be left inoperable, and will require your device to be send to the manufacturer.**

Prerequisites:

- First copy the mGuard software from the mGuard CD-ROM or retrieve it from Innominate Support and save it on the configuration system.
- A DHCP and a TFTP server, both installed on a single system, which provide the mGuard image files – see "Required before the firmware can be flashed: DHCP and TFTP servers" on page 140.
- mGuard PCI: When the mGuard is in Power-over-PCI mode the DHCP/ TFTP server must be connected to the mGuards LAN jack. When the mGuard is in Driver Mode the DHCP/TFTP server must listen on the mGuards network interface.

1. Hold the **Rescue Button** pressed until the *recovery status* is entered as follows:

   The mGuard will be restarted (after approx. 1.5 seconds) and after another approx. 1.5 seconds the mGuard will enter the *recovery mode*:

- blade, PCI: the green and the red LAN will light
- delta: the Status LED will slowly fade off
- EAGLE: the LEDs 1, 2 and V.24 will light
- smart: all LEDs will light green

2. No more than 1 second after the *recovery mode* was entered release the **Rescue Button**. (If you do not release the **Rescue Button** quickly enough, the mGuard will restart again.)
   The mGuard will now start the recovery system: It tries to receive an IP address from a DHCP server over the LAN port.

- Status display:
  - blade, PCI: the red LAN LED flashes
  - delta: the Status LED flashes
  - EAGLE: the LEDs 1, 2 and V.24 light orange
  - smart: the middle LED (heartbeat) flashes.

  The file install.p7s will be loaded from the TFTP server, which contains the installation procedure for the flashing. (Only files digitally signed by Innominate will be accepted.)
  Afterwards the flash memory will the be erased.
- Status display:
  - blade, PCI: the two green and the red LAN LED form a bouncing ball display in which the light shifts from one LED to the next.
  - delta: the Status LED will flash fast.
  - EAGLE: the LEDs 1, 2 and V.24 form a bouncing ball display in which the light shifts from one LED to the next.
  - smart: the 3 green LEDs form a bouncing ball display in which the light shifts from one LED to the next

  The file jffs2.img.p7s which contains the mGuard software will be loaded from the TFTP server and written onto the flash. (Only files digitally signed by Innominate will be accepted.)
  This process will take about 3 to 5 minutes.
- Status display:
  - blade, PCI: the green and the red LEDs will flash continuously
  - delta: the Status LED will light continuously
  - EAGLE: the LEDs 1, 2 and V.24 are off, the LEDs p1, p2 and Status will light continuously
  - smart: the middle LED (heartbeat) will light continuously

  The new software will be unpacked and configured. This process will take about 5 minutes.
  As soon as the procedure has been completed
  - blade, PCI: the mGuard restarts itself
  - delta: the Status LED will flash once per second continuously
  - EAGLE: the LEDs 1, 2 and V.24 will flash green continuously
  - smart: all 3 LEDs will flash green continuously

3. Restart the mGuard (not required on blade and PCI)
   To do so, press the **Rescue Button** briefly.
   OR
   Disconnect the power supply (smart: by disconnecting the USB cable which is only used to supply power) or in case of the mGuard PCI: restart the computer.

The mGuard will be now restored to its factory settings. Configure it once again

– see “Local Configuration: At startup” on page 34.

Required before the firmware can be flashed: DHCP and TFTP servers

Before the firmware can be “flashed” DHCP and TFTP servers must be installed on the locally connected system or a network system.
(DHCP = **D**ynamic **H**ost **C**onfiguration **P**rotocol; TFTP = **T**rivial **F**ile **T**ransfer **P**rotocol)

Install the DHCP and TFTP server, if necessary (see below).

⌧ If you install a second DHCP server in a network, this can affect the configuration of the entire network!

7.3.1 Installing DHCP and TFTP servers under Windows or Linux

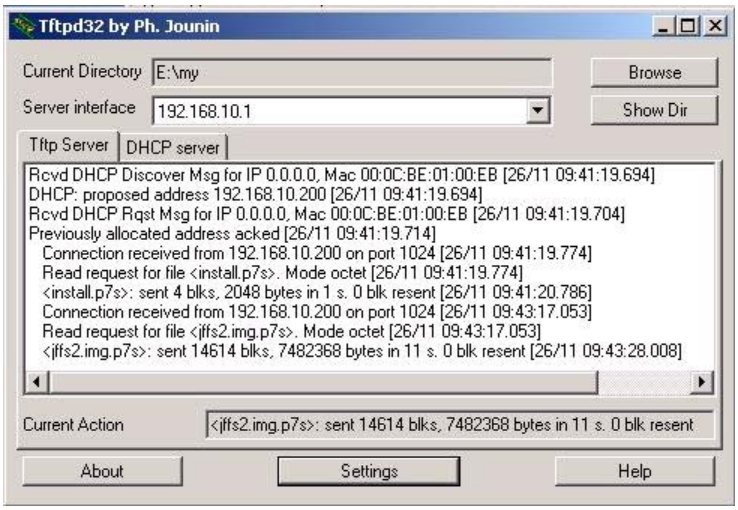
Under Windows

Install the program found on the CD-ROM. To accomplish this, proceed as follows:

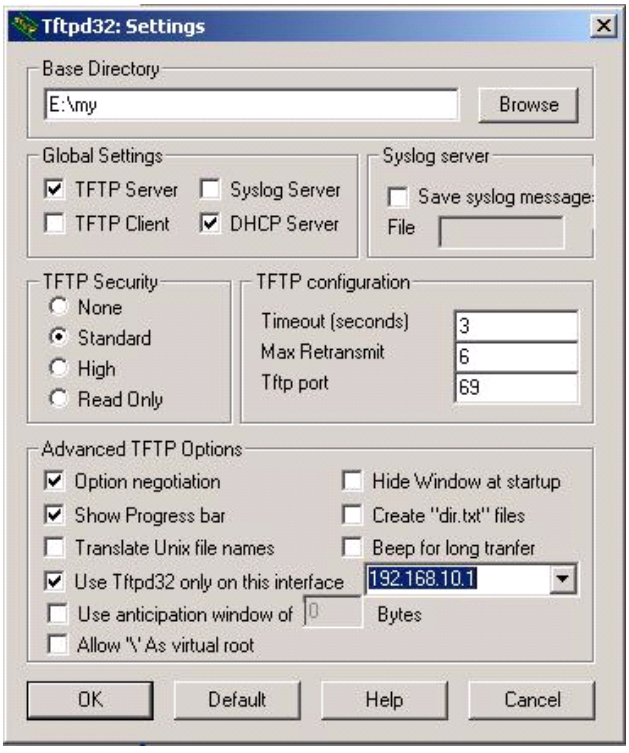
1. If the Windows system is connected to a network, disconnect it.
2. Copy the software into any empty folder on the Windows system. Start the program TFTPD32.EXE
3. The system's IP must be set to: **192.168.10.1.** This must also be the address of the network adapter.

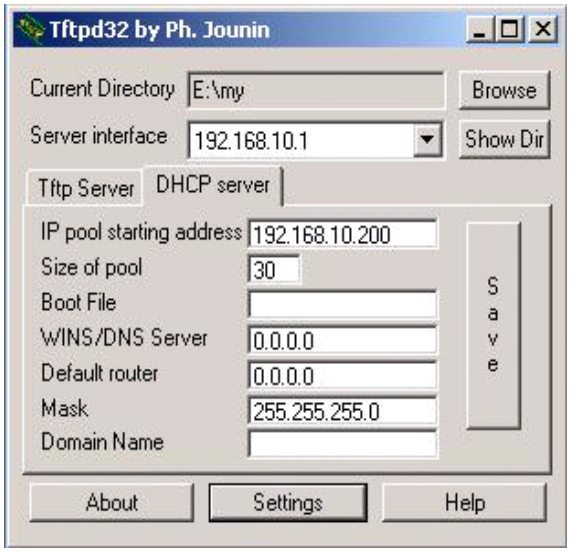
   Click on the **Browse** button to switch to the folder in which the mGuard image files have been saved: *install.p7s, jffs2.img.p7s*

The image files are also found on the CD-ROM, which was included in the package.


Tftpd32 by Ph. Jounin
Current Directory E:\my
Browse
Server interface 192.168.10.1
Show Dir
Tftp Server
DHCP server
Rcvd DHCP Discover Msg for IP 0.0.0.0, Mac 00:0C:BE:01:00:EB [26/11 09:41:19.694]
DHCP: proposed address 192.168.10.200 [26/11 09:41:19.694]
Rcvd DHCP Rqst Msg for IP 0.0.0.0, Mac 00:0C:BE:01:00:EB [26/11 09:41:19.704]
Previously allocated address acked [26/11 09:41:19.714]
Connection received from 192.168.10.200 on port 1024 [26/11 09:41:19.774]
Read request for file <install.p7s>. Mode octet [26/11 09:41:19.774]
<install.p7s>: sent 4 blks, 2048 bytes in 1 s. 0 blk resent [26/11 09:41:20.786]
Connection received from 192.168.10.200 on port 1024 [26/11 09:43:17.053]
Read request for file <jffs2.img.p7s>. Mode octet [26/11 09:43:17.053]
<jffs2.img.p7s>: sent 14614 blks, 7482368 bytes in 11 s. 0 blk resent [26/11 09:43:28.008]
Current Action
<jffs2.img.p7s>: sent 14614 blks, 7482368 bytes in 11 s. 0 blk resent
About
Settings
Help

4. Click on the TFTP Server or DHCP Server tab and then click on the Settings button to open the dialog shown below. Then set the parameters as shown:





Under Linux

All current Linux distributions include DHCP and TFTP servers. Install the corresponding packages as described in the instructions for the respective distribution.
Configure the DHCP server by making the following settings in the **/etc/dhcp file**:

```
subnet 192.168.134.0 netmask 255.255.255.0 {
range 192.168.134.100 192.168.134.119;
option routers 192.168.134.1;
option subnet-mask 255.255.255.0;
option broadcast-address 192.168.134.255;}
```

This sample configuration makes 20 IP addresses (.100 to .119) available. It is assumed that the DHCP server has the address 192.168.134.1 (settings for ISC DHCP 2.0).

The required TFTP server is configured in the following file:
/etc/inetd.conf
In this file, insert the appropriate lines or set the necessary parameter for the TFTP service. (The directory for the data is: **/tftpboot)**

```
tftp dgram udp wait root /usr/sbin/in.tftpd -s /tftpboot/
```

Then restart the inetd process to activate the modified configuration.
If you use a different mechanism, e.g. xinetd, please read the corresponding documentation.

8 Glossary

Asymmetrical encryption

In the case of asymmetrical encryption, data is encrypted with one key and decrypted with a second key. Either key may be used for encryption or decryption. One of the keys is kept secret by its owner (Private Key), the other is made available to the public (Public Key), i.e. possible communication partners.
A message encrypted with the public key can only be decrypted and read by the owner of the associated private key. A message encrypted with the private key can only be decrypted and read by a receiver who has the associated public key. The fact that the message was encrypted with the private key proves that the owner of the associated public key actually sent the message. Therefore, the expression “digital signature” is also often used.
However, asymmetrical encryption techniques such as RSA are both slow and susceptible to certain types of attack and are therefore frequently combined with some form of symmetrical encryption (→ symmetrical encryption). On the other hand, there are concepts which avoid the additional work of administering symmetrical keys.

DES / 3DES

This symmetrical encryption algorithm was developed by IBM and checked by the NSA. DES (→ symmetrical encryption) was set in 1977 by the American National Bureau of Standards, which was the predecessor of the National Institute of Standards and Technology (NIST), as the standard for American governmental institutions. Since this was the very first standardized encryption algorithm, it quickly won acceptance by industry even outside of America.
DES uses a 56 bit long key, which is no longer considered secure as the processing power available has greatly increased since 1977.
3DES is a variant of DES. It uses keys that are three times as long, i.e. 168 bits long. 3DES is still considered to be secure and is also included in the IPsec standard.

AES

Advanced Encryption Standard. This encryption standard was developed by NIST (National Institute of Standards and Technology) in cooperation with the industry. This → symmetrical encryption standard was developed to replace the earlier DES standard. AES specifies three different key sizes (128, 192 and 256 bits).
In 1997, NIST started the AES initiative and announced its conditions for the algorithm. From the many proposed encryption algorithms, NIST selected a total of five algorithms for closer examination – the MARS, RC6, Rijndael, Serpent and Twofish algorithms. In October 2000, the Rijndael algorithm was adopted as the standard‘s encryption algorithm.

Client / Server

In a client-server environment, a server is a program or computer, which accepts and answers queries from client programs or computers.
In data communication, a computer which establishes a connection to a server (or host) is also called a client. In other words, the client is the calling computer and the server (or host) is the computer called.

Datagram

In the IP protocol, data is sent in the form of data packets, which are known as IP datagrams. An IP datagram has the following structure:

IP Header	TCP, UDP, ESP etc. Header	Data (Payload)

The IP header contains:

– the IP address of the sender (source IP address)
– the IP address of the receiver (destination IP address)
– the protocol number of the protocol of the next higher protocol layer (in accord with OSI [seven layer] model)
– the IP header checksum used to check the integrity of the received header.

The TCP/UDP header contains the following information:
– the sender's port (source port)
– the recipient's port (destination port)
– a checksum covering the header and some information from the IP header (among others the source and destination IP addresses)

Default route

If a computer is connected to a network, the operating system creates a routing table internally. It lists the IP addresses that the operating system has identified based on the connected computers and the routes available at that moment. Thus the routing table contains the feasible routes (destinations) for sending IP packets. If IP packets are ready for sending, the computer's operating system compares the IP addresses stated in the IP packets with the entries in the routing table to determine the right route.

If a router is connected to the computer, and if its internal IP address (i.e., the IP address of the router's LAN port) has been relayed to the operating system as the standard gateway (in the network card's TCP/IP configuration), this IP address will be used as the destination if all other IP addresses in the routing table don't match. In this case the router's IP address specifies the default route, because all IP packets (by default = the standard) whose IP address have no counterpart in the routing table, i.e., can't find a route, are directed to this gateway.

DynDNS provider

Also *Dynamic DNS provider*. Every computer, which is connected to the Internet, has an IP address (IP = Internet Protocol). An IP address consists of a maximum of 4 three-digit numbers, which are each separated by a dot. If the computer accesses its Internet Service Provider (ISP) via a modem on a phoneline, ISDN or ADSL, its ISP will assign it a dynamic IP address. In other words, it will be assigned a different address for every online session. If the computer is online 24 hours a day without interruption (e.g. in the case of a flat rate access), the IP address will even change during the session.
If a local computer should be accessible via the Internet, it must have an address that is known to the remote system. Unless this is true no connection can be established between the remote system and the local computer. If the local computer‘s address is constantly changing, no connection can be setup. Unless, of course, the operator of the local computer has an account with a Dynamic DNS provider (DNS = Domain Name Server).
In this case, the operator can set a host name with this provider under which the system should be reachable, e.g.: www.example.com. The Dynamic DNS provider also supplies a small program, which must be installed and run on this local computer. At each new Internet session, this tool will inform the Dynamic DNS provider which IP address the local computer has currently been assigned. This Domain Name Server will register the current assignment of Domain Name - IP Address and will also inform the other Domain Name Servers in the Internet.
Now, if a remote system wishes to establish a connection to a local system, which is registered with the DynamicDNS provider, the remote system can use the host name of the local system as its address. This will setup a connection to the responsible DNS (Domain Name Server) to lookup the IP address that is currently registered for this hostname. The corresponding IP address will be

sent back from the DNS to the remote system, which can then use this as the destination address. The remote system can now directly address the desired local computer.
In principle, all Internet addresses are based on this procedure: First, a connection will be established to a DNS to lookup the IP address assigned for the domain name. Once that has been accomplished, this “looked up” IP address will be used to setup a connection to the desired remote site, which could be any site in the Internet.

IP address

Every host or router in the Internet or an Intranet has a unambiguous IP address (IP = Internet Protocol). The IP address is 32 bits (= 4 bytes) long and is written as 4 three-digit numbers (each in the range from 0 to 255), which are separated by a dot.
An IP address consists of 2 parts: the network address and the host address.

Network Address	Host Address

Each host [or workstation] in a network has the same network address, but a different host address. Depending on the size of the respective network – networks are categorized as Class A, B or C networks, which are each different in size – the two parts of the address differ in length:

	1. Byte	**2. Byte**	**3. Byte**	**4. Byte**
Class A	Network Address	Host Address		
Class B	Network Address		Host Address	
Class C	Network Address			Host Address

Whether the IP address of device in a network is Class A, B or C can be seen in the first byte of the IP address. The following has be specified:

	Value of the 1st Byte	**No. of bytes for the network address**	**No. of bytes for the host address**
Class A	1 - 126	1	3
Class B	128 - 191	2	2
Class C	192 - 223	3	1

As you can see, there can be a worldwide total of 126 Class A networks and each of these networks can have a maximum of 256 x 256 x 256 hosts (3 bytes of address space). There can be 64 x 256 Class B networks and each of these networks can have up to 65,536 hosts (2 bytes address space: 256 x 256). There can be 32 x 256 x 256 Class C networks and each of these networks can have up to 256 hosts (1 bytes address space).

Subnet Mask
Normally, a company’s network - with access to the Internet - is only officially assigned a single IP address, e.g. 123.456.789.21. Based on the first byte of this sample address, one can see that this company network is a Class B network and

therefore the last 2 bytes are free to be used for host addresses. With a Class B network, the company network has address space for up to 65,536 hosts (256 x 256).
Obviously, such huge network is not practical. At this point, one can see a need for subnetworks. The standard answers this need with the Subnet Mask. Like an IP address, this mask is 4 bytes long. The bytes, which represent the network address, are each assigned the value 255. The main purpose of the mask is to "borrow" a portion of the host address which can then be used to address the subnetworks. As an example, by using the subnet mask 255.255.255.0 in a Class B network (2 bytes for the network address, 2 bytes for the host address), the third byte, which was actually intended for host addressing, can now be used for subnet addressing. With this configuration, the company's network could support 256 subnetworks that each have 256 hosts.

IPsec

IP Security (IPsec) is a standard, which uses encryption to verify the authenticity of the sender and to ensure the confidentiality and integrity of the data in IP datagrams (→ Datagram). The components of IPsec are the Authentication Header (AH), the Encapsulating Security Payload (ESP), the Security Association (SA) and the Internet Key Exchange (IKE).
At the start of the session, systems which wish to communicate must determine which technique shall be used and the implications of this choice for the session e.g. *Transport Mode* or *Tunnel Mode*
In *Transport Mode*, an IPsec header will be inserted between the IP header and the TCP or UDP header respectively in each IP datagram. Since the IP header remains unchanged, this mode is only suitable for a host- to-host connection.
In *Tunnel Mode*, an IPsec header and a new IP header will be added in front of the entire IP datagram. As a consequence, the original datagram will be encrypted in its entirety and sent as the payload of the new datagram.
The *Tunnel Mode* is used in VPN applications: The devices at the tunnel ends ensure that the datagrams are encrypted before they pass through the tunnel so the actual datagrams are completely protected while being transferred over the public network.

NAT (Network Address Translation)

Using Network Address Translation (NAT) – which is also often called *IP-Masquerading* – an entire network is "hidden" behind a single device, which is know as a NAT router. The internal computers in the local network with their IP addresses will remain hidden, if you communicate with the outside via a NAT router. The remote system will only see the NAT router with its own IP address.
If the internal computers are to directly communicate with external systems (in the Internet), the NAT router must modify the IP datagrams that are passed back-and-forth between the internal computers and the remote sites.
If an IP datagram is sent from the internal network to a remote site, the NAT router will modify the UDP and TCP headers respectively of the outgoing datagrams. It replaces the source IP address and port with its own IP address and - thus far unused - port. It maintains a table in which the original values are listed together with the corresponding new ones.
When a reply datagram is received, the NAT router will recognize that it is actually for an internal computer from the datagram's destination port. Using the table, the NAT router will replace the destination IP address and port and pass the datagram on via the internal network.

Port Number

The UDP and TCP protocols assign a port number to each peer participating in the connection. This way it becomes possible to handle more than one UDP or TCP connection between two peers at the same time.

Fixed port numbers are assigned for certain, frequently used application processes. These are called a “Assigned Numbers”. E.g. HTTP connections are usually established to TCP port 80 or POP3 connections to port 110.

PPPoE

The acronym for **P**oint-to-**P**oint **P**rotocol **o**ver **E**thernet. This protocol is based on the PPP and Ethernet standards. PPPoE defines how to connect users via Ethernet with the Internet via a jointly used broadband medium such as DSL, a Wireless LAN or a cable modem.

PPTP

The acronym for **P**oint-to-**P**oint **T**unneling **P**rotocol. This protocol was developed in a cooperation between Microsoft, U.S. Robotics and others to securely transfer data between VPN nodes (→ VPN) via a public network.

X.509 Certificate

A type of “Seal”, which certifies the authenticity of a public key (→ asymmetrical encryption) and the associated data.
To enable the user of the public key, which will be used to encrypt the data, to be sure that the public key that he/she has received is really from its issuer and thus from the instance, which should later receive the data, it is possible to use certification. A *Certification Authority – CA* certifies the authenticity of the public key and the associated link between the identity of the issuer and his/her key. The certification authority will verify authenticity in accordance with its rules, which may, for example, require that the issuer of the public key appear before it in person. Once authenticity has be successfully certified, the certification authority will add its digital signature to the issuer’s public key. The result is a Certificate.
An X.509(v3) Certificate thus includes a public key, information about the key owner (given as it Distinguished Name (DN)), the authorized usage etc. and the signature of the certification authority.
The signature is created as follows: The certification authority creates an individual bit sequence, which is known as the HASH value, from the bit sequence of the public key, the information about its owner and other data. This sequence may be up to 160 bits long. The certification authority encrypts this with its own private key and then adds it to the certificate. The encryption with the certification authority's private key proves the authenticity of the certificate, i.e. the encrypted HASH string is the certification authority's digital signature. If the certificate's data is altered, this HASH value will no longer be correct with the consequence that the certificate will be worthless.
The HASH value is also known as the fingerprint. Since it is encrypted with the certification authority's private key, anyone who has the public key can decrypt the bit sequence and thus verify the authenticity of this fingerprint or signature.
The usage of a certification authority means it is not necessary for each owner of a key to know every other owner. It is enough for them to know the certification authority. The additional information about the key further simplifies the administration of the key.
X.509 certificates are used, e.g. for e-mail encryption, in S/MIME or IPsec.

Protocol, communication protocol

Devices, which communicate with each other, must follow the same rules. They must “speak the same language”. Such rules and standards are called protocols or communication protocols. Some of the more frequently used protocols include, for example, IP, TCP, PPP, HTTP and SMTP.

Proxy

A proxy (representative) is an intermediary service. A web proxy (e. g., Squid) is commonly placed upstream of a larger network. For example, if 100 employees accessed a certain website at the same time and did this via the web proxy, then the proxy would load the respective pages from the server only once

	and distribute them to the said employees. This reduces the outgoing traffic which, in turn, cuts down on costs.
Service Provider	Service providers are companies or institutions, which offer users access to the Internet or an online service.
Spoofing, Antispoofing	In Internet terminology, spoofing means supplying a false address. With the false Internet address, the user can create the illusion of being an authorized user. Anti-Spoofing is term for mechanisms, which detect or prevent spoofing.
Symmetrical encryption	In the case of symmetrical encryption, the same key is used to encrypt and decrypt the data. Two examples of symmetrical encryption algorithms are DES and AES. They are fast, but as the number of users increases the administration becomes rather involved.
TCP/IP (Transmission Control Protocol/ Internet Protocol)	This is a family of network protocols. It is used to connect two computers in the Internet. IP is the base protocol. UDP is based on IP and sends individual packets. The packets may arrive at the recipient in an order different from that in which they were sent or they may even be lost. TCP secures the connection and ensures, for example, that data packets are passed on the application in the right order. UDP and TCP add the Port Numbers 1 to 65535 to the IP Addresses. The various services offered by the protocols may be distinguished by these Port Numbers. A number of additional protocols are based on UDP and TCP, e.g. HTTP (HyperText Transfer Protocol), HTTPS (Secure HyperText Transfer Protocol), SMTP (Simple Mail Transfer Protocol), POP3 (Post Office Protocol, Version 3) and DNS (Domain Name Service). ICMP is based on IP and adds control messages. SMTP is an e-mail protocol that is based on TCP. IKE is an IPsec protocol that is based on UDP. ESP is an IPsec protocol that is based on IP. On a Windows PC, the WINSOCK.DLL (or WSOCK32.DLL) handles both protocols. (→ Datagram)
Trap	The SNMP protocol (Simple Network Management Protocol) is used in addition to the other protocols, especially in large networks. This UDP-based protocol is used for the central administration of network devices. For example, you can use the GET command to request a configuration or employ the SET command to change the configuration of a device, provided that the addressed network device is SNMP compliant. An SNMP-compliant device can also send SNMP messages independently, in case, for example, an extraordinary event should occur. Messages like this are called SNMP traps.
VLAN	A VLAN (Virtual Local Area Network) divides a physical network into several independent logical networks. Devices within a VLAN can only access devices within their own VLAN. The membership to a LAN is defined by the physiacl network topology and the VLAN ID (1-4094).

All devices with the same VLAN ID belong to the same VLAN and can therefore communicate with each other.

For a VLAN (based on IEEE 802.1Q) the ethernet frame is extended by 4 bytes, with 12 bits containing the VLAN ID. The VLAN IDs “0” and “4095” are reserved and can’t be used for VLAN identification.

VPN (Virtual Private Network)

A **V**irtual **P**rivate **N**etwork (VPN) connects several separate private networks (subnets) together via a public network, e.g. the Internet, to form a single joint network. A cryptographic protocol is used to ensure confidentiality and authenticity. A VPN thus offers an economical alternative to using dedicated lines to build a nationwide corporate network.

9 Technical data

General

CPU	Intel IXP 42x mit 266 MHz (or 533 MHz EAGLE und enterprise XL)
Memory	16 MB Flash, 64 MB SDRAM, mGuard delta: 128 MB
LAN and WAN Interfaces	Ethernet IEEE 802 10/100 Mbps RJ45
Serial	RS 232
Operating System	Innominate Embedded Linux
Monitoring / Indicators	Watchdog and LEDs
Relative humidity	blade, smart, PCI: max. 90 % (none condensing) delta: 5-95% (none condensing)
Temperature	smart, blade, delta: 0-40°C PCI: 0-70°C

EAGLE mGuard

Network size	Length of a 10BASE-T/100BASE-TX twisted pair segment 100 m approx.
Operating voltage	NEC Class 2 power source 12 VDC or 24 VDC (-25% +33%) safety extra-low voltage (SELV/PELV, redundant inputs decoupled), 5 A maximum. Buffer time min. 10 ms at 24 VDC.
Potential difference between input voltage and housing	Potential difference to input voltage, +24 VDC: 32 VDC Potential difference to input voltage, ground: -32 VDC
Power consumption	max. 7.2 W at 24 VDC; 24.6 Btu (IT)/h
Overload current protection at input	non-changeable fuse
Dimensions W x H x D	46 mm x 131 mm x 111 mm 1.8 in x 5.2 in x 4.4 in
Weight	340 g 0.8 lb
Ambient temperature	Surrounding air: 0 ºC to + 55 ºC; 32 °F to 131 °F
Storage temperature	Surrounding air: - 40 ºC to + 80 ºC; -40 °F to 176 °F
Humidity	10% to 95% (non condensing)
Atmospheric pressure	Suitable for operation up to 2000 m (6561 ft), 795 hPa
Pollution Degree	2

Interference proof	Discharge of static electricity Contact discharge EN 61000-4-2 Test level 3 Air discharge EN 61000-4-2 Test level 3 Electromagnetic fields EN 61000-4-3 Test level 3 Fast transients EN 61000-4-4 Test level 3 Surge voltage symmetrical EN 61000-4-5 Test level 2 Surge voltage asymmetrical EN 61000-4-5 Test level 3 Cable-based RF faults EN 61000-4-6 Test level 3
EMC emitted immunity	EMC emitted immunity EN 55022 Class A FCC 47 CFR Part 15 Class A Germanischer Lloyd Rules for Classification and Construction VI - 7 - 3 Part 1, Ed. 2003
Stability	Vibration IEC 60068-2-6 Test FC, testing level in line with IEC 61131-2 and Germanischer Lloyd Guidelines for the Performance of Type Tests Part 1 Shock IEC 60068-2-27 Test Ea, testing level in line with IEC 61131-2 Certifications cUL 508 / CSA 22.2 No.142 complies with cUL 1604 / CSA 22.2 No.213 pending Germanischer Lloyd complies with
Certifications	cUL 508 / CSA 22.2 No.142 complies with cUL 1604 / CSA 22.2 No.213 pending Germanischer Lloyd complies with

Notes on CE identification

The devices comply with the regulations of the following European directive: 89/336/EEC Council Directive on the harmonization of the legal regulations of member states on electromagnetic compatibility (amended by Directives 91/263/EEC, 92/31/EEC and 93/68/EEC).

The EU declaration of conformity is kept available for the responsible authorities in accordance with the above-mentioned EU directives at:

Innominate Security Technologies AG
Albert-Einstein-Str. 14
D-12489 Berlin
Telephone ++49 (0)30 6392-3300

The product can be used in the residential sphere (residential sphere, business and trade sphere and small companies) and in the industrial sphere.

- Interference proof:
  EN 61000-6-2:2001
- Emitted immunity:
  EN 55022:1998
  + A1 2000
  + A2 2003, Class A

FCC Note

This equipment has been tested and found to comply with the limits for a Class A digital device, persuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.